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NEW YORK STATE
BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM
1986 and 1987

NEW YORK STATE DEPARTMENT OF HEALTH
ALBANY, NEW YORK
JANUARY 1990

NEW YORK STATE DEPARTMENT OF HEALTH MONOGRAPHS

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PREFACE

This monograph summarizes the findings of two statewide surveys on the prevalence of important behavioral risk factors in New York residents. Both surveys were conducted by the New York State Department of Health. Analysis of these data has been a collaborative effort of many staff members in the Center for Community Health (Lloyd Novick, M.D., Director) who contributed substantial amounts of time writing various sections of the monograph. The authors are listed at the beginning of their respective chapters.

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EXECUTIVE SUMMARY

Based on the success of an initial risk factor survey administered in 1983, the New York State Department of Health along with 20 other states and the District of Columbia joined the Centers for Disease Control's (CDC) ongoing behavioral risk factor surveillance system (BRFSS). Interviews are conducted monthly by telephone using random-digit dialing survey methods. Results from the 1983 and 1985 BRFSS surveys have been previously reported (New York State Department of Health Monograph No. 22, July 1987). This monograph presents data obtained from the 1986 and 1987 surveys.

Many personal health behaviors place people at risk of morbidity or premature mortality. Data collection on risk behaviors is useful in planning and directing public health promotion efforts aimed at reducing these behaviors.

Ten risk behaviors are described using responses to the 1986 and 1987 BRFSS surveys in New York State. BRFSS survey data provide point estimates of risk factor prevalence in the New York State population. To aid in the interpretation of these point estimates, confidence intervals are presented in each risk factor summary section. The relative importance, specific findings and recommendations for each risk factor are highlighted below:

- **Alcohol** - Annually in New York State, over 7,000 deaths, more than 1.3 million days of hospitalization, 7,600 emergency room visits and 100,000 years of lost productive life are believed to be linked to alcohol use. The prevalence of drinking to intoxication (acute drinking), defined as five or more drinks on a single occasion during the previous month, was 15.9 percent in 1986 and 13.5 percent in 1987. Males were more likely than females to report this behavior. An inverse relationship was observed between acute drinking and both age and education. The prevalence of chronic alcohol use, that is, consuming 60 or more drinks during the previous month, was 7.4 percent in 1986 and 5.2 percent in 1987, with males more likely than females to be at risk. The prevalence of driving after drinking based on reports of operating a motor vehicle after having had "too much" to drink was less than 3 percent in both 1986 and 1987. Public information and education about the risks of alcohol must address both the concepts of acute and chronic consumption levels, as well as specific risk situations, including drinking and driving, and drinking during pregnancy.

- **Cholesterol** - Elevated blood cholesterol levels increase the risk for cardiovascular disease. Results of the 1987 BRFSS survey indicated that 35.9 percent of New York State respondents reported having had their cholesterol level checked at some time. (Questions about cholesterol were asked only in the 1987 BRFSS survey.) While 90.7 percent of those who were tested reported having had their cholesterol level checked during the previous two years, only 26.3 percent reported being told the level in numbers. Less than 9 percent of respondents reported being instructed by a doctor to reduce their blood cholesterol levels. Adults with elevated blood cholesterol levels must be identified and effectively counselled and treated to help reduce cardiovascular morbidity and mortality rates. The New York State

Healthy Heart Program, initiated in 1988, aims to prevent cardiovascular disease by increasing awareness of cholesterol levels and emphasizing the control of modifiable risk factors, such as elevated blood cholesterol levels, smoking and high blood pressure.

- **Hypertension** - Hypertension is the underlying cause of more than 1,400 deaths in New York State annually, and is also an important contributory cause to the 80,000 heart attack and stroke deaths each year. The prevalence of hypertension among BRFSS respondents was 16.1 percent in 1986 and 12.3 percent in 1987; higher rates of hypertension were observed with increasing age. In 1986, 61.1 percent of hypertensive respondents reported that they were on antihypertensive medications, while medication usage decreased to 55.7 percent in 1987. Health professionals and public health agencies should continue efforts to identify diagnosed hypertensives who are not currently being treated and those whose hypertension remains uncontrolled. Public education and awareness of hypertension are components of the ongoing Healthy Heart Program.

- **Mammography** - Each year, nearly 10,000 new breast cancer cases are diagnosed and almost 4,000 breast cancer deaths occur among New York State women. Although mammography has been demonstrated to be an effective screening procedure for the early detection of breast cancer, only 24.7 percent of women ages 40 years and over who visited a physician during the past year reported having a screening mammogram. An additional 7.1 percent of women ages 40 years and over reported that they had received a diagnostic mammogram during the previous year. (Analyses were restricted to women ages 40 years and over, who have been identified to benefit most from annual or biannual mammograms.) Programs must stress the importance of having mammograms at recommended intervals, provide information on third party reimbursement, and highlight the safety of mammography. Educational programs are critical for minority populations that indicate less knowledge about the value of mammograms.

- **Overweight (Obesity)** - Obesity, a high proportion of adipose tissue, increases the risk of cardiovascular disease, hypertension, diabetes and cancer. While it was not possible to measure obesity using a telephone survey, "overweight" respondents were identified using self-reported measures of weight relative to height compared to the 1959 Metropolitan Life Tables. Overweight was defined as weight for height above 120 percent of the mid-point range for a medium frame person. About 24 percent of respondents were overweight during both 1986 and 1987. Older respondents were likely to be obese during both 1986 and 1987. In 1986, 40.3 percent of respondents reported they were trying to lose weight, while in 1987, 30.5 percent reported they were currently attempting to lose weight. Calorie control was used by over 80 percent of those trying to lose weight. Increased attention should focus on the appropriate use of physical activity in weight loss. Educational messages should identify the components of a safe and effective weight loss regimen and encourage long-term efforts.

- **Physical Activity** - Regular physical activity and exercise contribute to the enhancement of health and well-being, the amelioration of the effects of chronic disease and age and the prevention of disease. Lack of regular exercise, defined as either no physical activity, physical activity less than three times each week or physical activity of less than 20 minutes duration, places the individual in the "sedentary lifestyle" category. Based on BRFSS responses, the prevalence of sedentary lifestyle was 59.6 percent in 1986 and 73.5 percent in 1987. An inverse relationship was observed between risk of sedentary lifestyle and both education and income. Medical care encounters and worksite programs are ideal settings to address misconceptions about exercise and to encourage regular, sustained physical activity.

- **Preventive Practices** - Preventive health practices, such as annual physical examination and flu shots, help prevent and reduce disease. Questions on physical examinations and flu shots were asked in the 1987 BRFSS survey. Almost 68 percent of 1987 respondents reported having received a check-up during the previous year, with a larger proportion of females compared to males reported having received a check-up. Overall, 9 percent of 1987 respondents reported having received a flu shot during the past year; a significant association was observed with increasing age. Among males and females ages 65 years and older, 27.7 percent reported having received a flu shot during the past year. Based on these results, most individuals seem to be complying with recommended guidelines for the interval between physical examinations. Educational efforts should continue to stress the importance of annual flu shots among people ages 65 and older.

- **Seat Belts** - Seat belts reduce injuries and death resulting from motor vehicle accidents. Although New York State has mandated seat belt use since 1985, approximately 21 percent of respondents to the 1986 and 1987 BRFSS surveys reported that they "sometimes," "seldom" or "never" used seat belts when riding in a car. An epidemiologic evaluation of the seat belt law is currently being completed by the New York State Department of Health. Efforts should continue to provide passive restraint systems in all vehicles in order to provide occupants with protection in the event of a vehicle crash.

- **Smoking** - Cigarette smoking remains the single most important behavioral risk factor for premature morbidity and mortality resulting from cardiovascular disease, cancer and lung diseases. The prevalence of smoking among respondents was 27.0 percent in 1986 and 23.2 percent in 1987; smoking rates did not differ among males and females. In the 1986 survey, an inverse relationship was observed between age and smoking prevalence. The 1987 BRFSS survey revealed an inverse relationship between level of education and the proportion of smokers. More than 42 percent of current smokers in the 1986 survey and 33 percent of smokers in the 1987 survey reported having stopped smoking for at least one week in the past year. Strategies should reduce recidivism and assist smokers in their attempts at achieving smoke-free lifestyles.

- **Multiple Risk** - The risk of adverse health consequences from certain behaviors increases substantially when two or more related behaviors are exhibited by an individual. Smoking, overweight and hypertension all contribute to the risk of cardiovascular disease. In 1986, 6.2 percent of respondents reported two of these three risk factors; in 1987, only 4.7 percent demonstrated two of these risk factors. Less than 1 percent indicated all three cardiovascular disease risk factors in either 1986 or 1987. Cigarette smoking and chronic alcohol use contribute to the risk of developing oral cancer. Less than 4 percent of 1986 respondents reported both of these risk factors, while in 1987, both risk factors were reported by 1.8 percent of respondents. Acute drinking, drinking and driving, and failure to use seat belts increase the likelihood of serious injury or death in a motor vehicle accident. The proportion of respondents who engaged in two of these three behaviors was 3.5 percent in 1986 and 1987. Fortunately, most people do not appear to be engaged in multiple risk behaviors for these selected health outcomes. Nonetheless, educational efforts to inform the public about the synergistic effects of certain risk factors should be continued.

INTRODUCTION AND PURPOSE

Introduction

During the late 1970s, the Health Education/Risk Reduction Grant Program of the Centers for Disease Control (CDC) established risk reduction programs nationwide in order to meet three goals: (1) to increase awareness in the general population of the health hazards of smoking, alcohol abuse, obesity, stress, hypertension and other risk factors relating to preventable health conditions and diseases; (2) to provide high-risk groups (e.g., adolescents, pregnant women, the elderly, poor and minority populations) with the opportunity to make informed, responsible decisions affecting their health; and (3) to bring about a measurable reduction in premature deaths and disability as a result of the reduced incidence and prevalence of behavioral risk factors.

Behavioral risk factor surveys were first conducted in the early 1980s when CDC provided technical assistance to state health departments to enable them to use a standardized methodology for conducting telephone surveys. The goal of these periodic surveys was to provide state-specific estimates of the proportion of individuals reporting health risk behaviors associated with the leading causes of premature deaths in the United States. In 1984, CDC initiated the Behavioral Risk Factor Surveillance System (BRFSS) in which participating states and the District of Columbia conduct monthly telephone surveys using a standardized questionnaire as part of an ongoing annual surveillance effort. These surveys provide data which may be useful for planning, initiating and supporting health promotion and disease prevention programs.

Based on the success of an initial risk factor survey administered in 1983, the New York State Department of Health joined 20 other states and the District of Columbia in CDC's ongoing surveillance system (the BRFSS). The BRFSS program has slowly expanded to include additional states. Participants in the 1986 and 1987 BRFSS surveys are listed in Appendix C. From 1985 through 1988, approximately 100 completed interviews were obtained every month. Data collected during 1983 and 1985 have been presented and discussed in a previously published New York State Department of Health Monograph No. 22 (July 1987). This monograph will focus on the data obtained from the 1986 and 1987 surveys.

Purpose

There are four main purposes of the BRFSS:

(1) to determine the annual state-specific prevalence of personal health behaviors related to the leading causes of premature death;

(2) to determine the seasonal patterns of personal health behaviors of the aggregate of the states;

(3) to provide a rapid means to acquire population-based health risk information;

(4) to advance the understanding that health-related behaviors are critical indices of the health status of Americans.

The BRFSS is an important tool for health care planners and program staff at both the state and local level. It represents a source of data that can be used to estimate base line risk factor prevalence rates that can aid in establishing program priorities and targeting services. Information on prevalence of risk factors is useful in planning and directing public health promotion efforts and legislative initiatives. Relevant information on trends and associations among health risk behaviors can help guide decisions regarding program design, targeting and costs of disease prevention programs. Comparisons of base line and post-intervention data provide a method of evaluating the success of various health education strategies.

This monograph describes the methodology used in the 1986 and 1987 BRFSS surveys, the sociodemographics of respondents to these surveys in New York State and provides detailed summaries of risk factor prevalence data. The risk factor sections are arranged alphabetically according to risk factor title. Tables and figures follow the text describing each risk factor; references conclude each risk factor section.

METHODOLOGY

Sampling Design

The 1986 and 1987 BRFSS surveys used probability sampling, a method of selecting a sample of individuals to represent some larger group known as the target population. In the BRFSS, the target population is all residents of New York State ages 18 years and older. Respondents for the survey were selected randomly from all New York residents with telephones. The sample was selected with the use of a multistage cluster design procedure based on the Waksberg Random Digit Dialing Technique (1). Using this method, telephone numbers were randomly generated using area codes and prefixes that are known to exist in the state. Clusters of 100 telephone numbers, called primary sampling units (PSU), were constructed.

One randomly selected number from each PSU was called. If the telephone number reached a residence, the entire cluster of 100 numbers was accepted. If the telephone number reached a business, an institution or was a nonworking telephone number, the entire PSU was rejected. Once a PSU had been screened and accepted, telephone numbers were randomly called until three interviews were completed within each PSU. After a household had been contacted, an adult aged 18 years or older was randomly selected from among the adults residing in the eligible household to participate in the survey (2).

Questionnaire and Definition of Variables

The 1986 and 1987 BRFSS survey questionnaires consisted of a core of questions that were jointly developed by all of the participating states, the District of Columbia and CDC. Selected questions from national surveys such as the National Health Interview Survey and the National Heart, Lung and Blood Institute's hypertension surveys were included in the core questionnaire.

An "at risk" category was defined for each health behavior and remained consistent, whenever possible, with those used in existing national health surveys. CDC has developed uniform definitions for each risk factor included in the 1986 and 1987 BRFSS:

RISK FACTOR	DEFINITION
Acute Drinking	Respondents who reported having five or more alcoholic drinks on an occasion, one or more times in the past month.

RISK FACTOR	DEFINITION
Chronic Drinking	Respondents who reported an average of 60 or more alcoholic drinks a month.
Drinking and Driving	Respondents who reported having driven after having too much to drink, one or more times in the past month.
Hypertension	Respondents who reported they have been told their blood pressure is high more than once, or are on medication or report their blood pressure is still high. This is the definition used by the National Heart, Lung and Blood Institute.
Overweight (Obesity)	Respondents at or above 120 percent of ideal weight. Ideal weight is defined as the mid-value of a medium frame person based on the 1959 Metropolitan Life Insurance Company's height-weight tables.
Seat Belt Usage	Respondents who reported they "sometimes," "seldom" or "never" use seat belts.
Sedentary Lifestyle	Respondents who reported either no physical activity or physical activity at levels less than three times per week and/or less than 20 minutes per session.
Smoking	Current regular smokers included individuals who responded positively to the questions: "Do you smoke now?" and "Ever smoked 100 cigarettes?"
Smokeless Tobacco	Current smokeless tobacco users included individuals who responded positively to the questions: "Ever used or tried smokeless tobacco?" and "Use smokeless tobacco now?" (1987 only)

In addition to these items, specific questions on cholesterol, mammography and preventive health practices were asked.

Data Collection Procedures

Since 1985, all telephone interviews for the BRFSS have been conducted from the Broome County Department of Health, Binghamton, New York (south central New York State).

To improve efficiency in contacting eligible respondents, interviews were conducted primarily during weekday evenings and on weekends during one week every month according to CDC's designated interviewing schedule.

Data collection for the BRFSS is facilitated by a Computer Assisted Telephone Interviewing (CATI) system. The CATI system allows the telephone interviewers to utilize computer terminals in conducting the survey and permits direct entry of the data into a computer file. Strengths of the CATI system include facilitation of interviewer monitoring, the ability to execute quality control at the time of data entry, and control of the logical flow of the interview. The CATI system will alert the interviewer of an invalid response code error and thus provides an opportunity for the interviewer to correct the problem immediately. When only certain sections of the questionnaire apply to a respondent, the CATI system will automatically branch into appropriate sections of the interview. For example, if the respondent has never used tobacco, all questions relating to current or past use of tobacco will be skipped and the next section of the survey will begin. Also, the CATI system reduces interviewer bias by randomly assigning telephone numbers to interviewers.

Data Quality

New York State strictly adheres to CDC's quality control procedures for the BRFSS and the CATI system. The response rate is important to quality control as it measures the extent to which interviews were obtained from the telephone numbers selected for the sample. Generally, the higher the response rate, the more successful the interviewers were in reaching all eligible respondents and the lower the potential will be for bias in the data.

CDC typically uses a formula developed by the Council of American Survey Research Organizations (CASRO) to present response rates for the BRFSS. CASRO defines response rates as the proportion of the telephone numbers called that resulted in completed interviews. Using this procedure, the 1986 and 1987 response rates were 59.0 percent and 62.0 percent, respectively.

In order to be consistent with the previously published statistical monograph, which presented the data from the 1983 and 1985 BRFSS surveys, response rates for the 1986 and 1987 data have also been determined using a slightly different method that consists of dividing the number of completed interviews by the number of processed interviews. Using this method, a response rate of 80.0 percent was achieved in the 1986 BRFSS survey while the 1987 BRFSS survey achieved a response rate of 82.0 percent. These response rates were calculated in the following manner:

- Calls to 3,026 random telephone numbers were attempted for the 1986 BRFSS survey. Of these calls, 561 were nonworking numbers, 203 were nonresidential numbers, 221 calls could not be processed due to the noneligible status of the respondent and 593 calls were not answered or had busy signals. The final number of interviews processed was 1,448. Of these, 205 concluded in refusals to participate, 83 consisted of a language barrier or other problem, and 2 were eliminated because of unresolved coding errors, for a total of 1,158 completed interviews.

- For the 1987 BRFSS survey, 2,999 random telephone calls were attempted. Among these attempts, 539 were nonworking numbers, 248 were nonresidential numbers, 193 calls could not be processed due to the noneligible status of the respondent and 571 calls were not answered or had busy signals. The final number of interviews processed was 1,394. Of these, 183 concluded in refusals to participate and 77 consisted of a language barrier or other problem for a total of 1,188 completed interviews.

Weighting Procedure

Weighted prevalence rates are presented throughout this monograph. The weighting factor was necessary for the adjustment of selection probabilities and nonresponse rates among various age, race and sex groups. The description for the demographics of the population surveyed presents both weighted and unweighted data, since the unweighted data represent the actual characteristics of the sample respondents. The sociodemographics of the survey respondents are summarized in a following section.

Several adjustments were used to construct the weighting factor for each respondent. The size of each weight is inversely related to the probability of selection in the survey. The first weight adjusted for the number of people 18 years of age or older who were listed in the respondent's household divided by the number of unique telephone numbers in that household. This procedure adjusted for a greater probability of selection among households with more than one unique phone number, as well as the fact that only one adult was surveyed from each household contacted (3). A second weight adjusted for differences resulting from the selection of a greater or lesser number of completed interviews than desired within some clusters. Households in clusters with more than the desired number of completed interviews had a greater chance of being selected while households in clusters with fewer than the desired number of completed interviews had a lesser chance of being selected (3). An additional weight adjusted the age, race and sex distribution of the survey respondents to more closely correspond to 1980 United States census data (3). The product of these three adjustments yielded a weighting factor which was applied to individual responses in the surveys (1,3).

Larger weighting factors were applied to respondents with a lower probability of selection into the survey (e.g., lower income respondents, males, and non-whites), while smaller weighting factors were applied to respondents with a greater probability of selection (e.g., homes with multiple telephone numbers, individuals ages 25-44, and women). Survey respondents with larger weighting factors exerted greater influence on the weighted risk factor survey estimates than did respondents with smaller weighting factors (3).

Confidence Intervals

This monograph presents risk factor prevalence estimates for the New York State population based on BRFSS surveys conducted during 1986 and 1987. The prevalence figures which are shown are not intended as exact prevalence measures, but instead provide an estimate of the risk factor prevalence in the general population of New York State. A certain amount of variation or imprecision is associated with each of these estimates. Confidence intervals (95 percent) have been included with risk factor prevalence estimates to aid interpretation and allow comparisons between population groups.

The imprecision of prevalence estimates increases as sample size decreases within individual substrata (i.e., age, race, educational levels). Therefore, variance parameters have been included with risk factor prevalence estimates within specific subgroups. Due to the complex sampling design of the BRFSS survey, it was not possible to assume a normal distribution when calculating variance estimates. Statistical software exists which accounts for variation resulting from the sampling design of the BRFSS and can be used to calculate the exact 95 percent confidence intervals for prevalence estimates for major risk factors. Such software, however, is not currently available to the authors of this monograph. Therefore, a conservative estimate of the variance for each prevalence estimate was determined by multiplying the standard error (SE) by 1.5. Confidence intervals were then calculated using this estimate of the standard error.

The formula is shown below:

$$p \pm 95\% \text{ confidence interval } \underline{\text{estimate}}$$

$$p \pm 1.96 \times SE' \text{ where } SE' = 1.5 \times SE$$

$$\text{or, } p \pm 1.96 \times \left[1.5 \times \left(\sqrt{\frac{(p)(q)}{n}} \right) \right]$$

where p = risk factor prevalence estimate
$q = 1 - p$
n = sample size
$\sqrt{\frac{(p)(q)}{n}}$ = standard error

While this method of computing confidence intervals for these estimates is not exact, it does allow comparison of risk factor prevalence estimates within population strata.

Limitations

There are several limitations to the BRFSS data. The 1986 and 1987 surveys are intended to provide estimates of the overall prevalence of various risk factors in the New York State population. Due to the limited sample size, it is not possible to present estimates of risk factor prevalence for specific geographic regions within New York State (e.g., counties). Telephone surveys may underrepresent certain population groups, leading to biased risk factor estimates. To be eligible to participate in the BRFSS an individual must reside in a household that had at least one telephone. Lower socioeconomic populations, for example, who are less likely to have a telephone in their homes, may be underrepresented among survey respondents. Bias may also result from difficulty in contacting eligible participants from specific population subgroups (e.g., language barriers) and from higher refusal rates among certain groups.

While we recognize the need for data stratified age, race and sex groups, the small size of the BRFSS New York State sample limits our ability to present precise estimates of prevalence within specific strata. Recognizing the limited sample size for these surveys, the following risk factor descriptions have attempted to avoid overstratification of survey responses. Nonetheless, because of large sampling errors and small numbers of respondents within various strata, it is necessary to proceed cautiously when performing comparisons within strata (2).

These risk factor estimates apply only to adults ages 18 years and older. This is a limitation if risk factor prevalence estimates among individuals under age 18 are desired. For example, national research studies indicate that use of smokeless tobacco products appears to be more prevalent among adolescents, yet these data do not permit us to compare New York's adolescents to a national sample. Estimates do not provide information regarding use of smokeless tobacco products of individuals under age 18. Additional research studies need to be designed to obtain risk factor prevalence among adolescent populations.

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SOCIODEMOGRAPHIC PROFILE

Selected sociodemographic characteristics of the unweighted 1986 and 1987 BRFSS samples are summarized in Table 1. For each variable, corresponding values for the New York State population have been included for comparison. New York State data is based on both the 1980 U.S. census enumerations and 1985 population estimates from the New York State Commerce Department. A further breakdown of each variable by sex (unweighted data) is shown in Table 2.

1. Sex - Both surveys over-represent the female population by about 6 percent. There were a slightly greater number of female respondents to the 1987 survey.

2. Age - The BRFSS does not include anyone under 18 years of age. The predominant age group in both samples was 25-34 years. The distribution of the remaining age groups was similar in both years. Compared to 1985 population estimates for New York State, people ages 18-24 were under-represented in both surveys.

3. Race/Ethnicity - Most respondents to both BRFSS surveys reported their race/ethnicity as white, non-Hispanic. A comparison of survey samples with the New York State population in 1980 indicates that the proportionate distribution of people of races other than white, non-Hispanic or black, non-Hispanic was greater in both the 1986 and 1987 surveys.

4. Education - The average educational levels of respondents to both the 1986 and 1987 BRFSS surveys were well above levels reported in the 1980 census data. Eighty-one percent of the 1986 sample and 83 percent of the 1987 sample reported having earned at least a high school diploma compared to 66 percent of the New York State population in 1980. College graduates were over-represented among survey respondents with 27 percent of 1986 respondents and 24 percent of 1987 respondents reporting having earned a college and/or graduate degree. By comparison, only 16 percent of New York State residents in 1980 held equivalent degrees. There was a marked difference in level of education by sex for both survey years, with males reporting a greater proportion of college and/or graduate degrees.

5. Marital Status - Nearly 80 percent of survey respondents in both surveys reported ever being married, exceeding the the proportion of New York State residents who reported ever being married in 1980 (69 percent). This discrepancy may be due to the fact that the New York State data obtained for the 1980 census includes people ages 15-17 years for whom marital rates are very low. The proportion of respondents who reported ever being married was similar for males and females during 1986 and 1987.

6. Household Income - A smaller proportion of survey respondents reported household incomes under $10,000 compared to census data for New York State. Conversely, people reporting higher incomes were over-represented among survey respondents. These differences may be

partially explained by modest increases in per capita income between 1980 and 1987. A comparison of income levels by sex indicated that the proportion of male respondents reporting higher income levels (>$35,000) was greater than that reported by females.

7. Residence - In 1986, the proportion of survey respondents who resided in New York City was greater than the proportion of New York State residents reported to be living in this area based on 1985 population estimates. In 1987, the distribution of respondents from New York City and the rest of the state was comparable to the population estimates for 1985.

Table 3 presents the weighted distributions of sociodemographic characteristics for respondents to the 1986 and 1987 BRFSS surveys. Differences in the demographic distributions of the survey respondents in comparison with New York State population data have been minimized through the use of weighting factors previously described.

Table 1.

COMPARISON OF SOCIODEMOGRAPHIC CHARACTERISTICS OF UNWEIGHTED BRFSS SAMPLES FOR 1986 AND 1987 WITH THE NEW YORK STATE POPULATION

		unweighted BRFSS 1986 (%)	 1987 (%)	NYS Population (%)
SEX:	Male	42.0	39.6	47.3[a]
	Female	58.0	60.4	52.7
AGE:	18-24 years	10.5	11.2	15.6[a,b]
	25-34	24.0	23.5	22.3
	35-44	19.6	21.4	18.1
	45-54	13.4	11.2	13.3
	55-64	12.7	13.3	13.5
	65+	19.6	19.4	17.2
RACE/ETHNICITY:				
	White, not Hispanic	74.3	79.0	81.6[c]
	Black, not Hispanic	11.1	11.4	12.4
	Other	13.4	9.3	6.0
	Unknown	1.2	0.3	0.0
EDUCATION:	< High School	19.1	16.8	31.8[c]
	High School	32.2	34.6	35.0
	Some college	21.6	23.7	16.9
	College graduate	26.8	24.1	16.4
	Unknown	0.3	0.8	0.0
MARITAL STATUS:	Ever married	78.5	79.3	69.4[c,d]
	Never married	21.0	20.6	30.6
	Unknown	0.5	0.1	0.0
HOUSEHOLD INCOME:	< $10,000	19.3	17.2	30.4[c]
	$10,000 - 14,999	12.2	10.8	14.9
	$15,000 - 19,999	11.5	14.0	13.6
	$20,000 - 24,999	11.2	10.7	11.9
	$25,000 - 34,999	16.7	17.6	15.3
	$35,000 - 50,000	14.3	12.9	8.9
	$50,000 +	14.8	16.8	5.2
REGION:	New York City	45.4	40.1	40.5[a]
	Rest of state	54.6	59.9	59.5

In 1986, 486 males and 672 females were surveyed, while in 1987, the survey included 471 males and 717 females. Distributions of age and income for both 1986 and 1987 exclude respondents with unknown values for these variables.

[a] 1985 population estimates, New York State Commerce Department.
[b] Percent distribution based on people ages 18 and over.
[c] 1980 U.S. census data for New York State.
[d] People ages 15 and over.

Table 2.

COMPARISON OF SOCIODEMOGRAPHIC CHARACTERISTICS OF UNWEIGHTED BRFSS SAMPLES FOR 1986 AND 1987 BY SEX

		1986		1987	
		Males (%)	Females (%)	Males (%)	Females (%)
AGE:	18-24 years[a]	11.6	10.1	10.0	12.0
	25-34	22.7	24.9	26.4	21.5
	35-44	23.3	16.8	19.4	22.8
	45-54	13.1	13.6	11.2	11.1
	55-64	14.1	11.6	14.5	12.5
	65+	15.2	23.0	18.5	20.1
RACE/ETHNICITY:					
	White, not Hispanic	84.4	80.1	84.7	83.4
	Black, not Hispanic	9.9	15.6	11.7	13.1
	Other	4.3	3.3	3.2	3.2
	Unknown	1.4	1.0	0.4	0.3
EDUCATION:	< High School	17.1	20.5	14.7	18.1
	High School	26.6	36.3	29.3	38.1
	Some college	22.4	21.0	25.1	22.9
	College graduate	33.5	21.9	30.1	20.2
	Unknown	0.4	0.3	0.8	0.7
MARITAL STATUS:	Ever married	79.0	78.1	78.8	79.5
	Never married	20.6	21.3	21.2	20.4
	Unknown	0.4	0.6	0.0	0.1
HOUSEHOLD INCOME:	< $10,00	10.0	26.5	11.5	21.0
	$10,000 - 14,999	11.9	12.5	9.5	11.7
	$15,000 - 19,999	11.4	11.6	14.8	13.5
	$20,000 - 24,999	12.4	10.2	12.3	9.7
	$25,000 - 34,999	17.0	16.5	17.8	17.4
	$35,000 - 50,000	17.5	11.7	14.0	12.1
	$50,000 +	19.8	11.0	20.1	14.5
REGION:	New York City	42.2	47.8	39.5	40.4
	Rest of state	57.8	52.2	60.5	59.6

In 1986, 486 males and 672 females were surveyed, while in 1987, the survey included 471 males and 717 females. Distributions of age and income for both 1986 and 1987 exclude respondents with unknown values for these variables.

[a] Percent distribution based on people ages 18 and over.

Table 3.

COMPARISON OF SOCIODEMOGRAPHIC CHARACTERISTICS OF WEIGHTED BRFSS SAMPLES FOR 1986 AND 1987 WITH THE NEW YORK STATE POPULATION

		weighted BRFSS 1986 (%)	weighted BRFSS 1987 (%)	NYS Population (%)
SEX:	Male	46.3	46.3	47.3[a]
	Female	53.7	53.7	52.7
AGE:	18-24 years	16.8	16.8	15.6[a,b]
	25-34	21.5	21.7	22.3
	35-44	15.9	15.9	18.1
	45-54	14.8	14.9	13.3
	55-64	14.1	14.0	13.5
	65+	16.7	16.7	17.2
RACE/ETHNICITY:				
	White, not Hispanic	75.2	78.4	81.6[c]
	Black, not Hispanic	10.5	11.2	12.4
	Other	13.6	9.9	6.0
	Unknown	0.7	0.5	0.0
EDUCATION:	< High School	17.6	16.3	31.8[c]
	High School	36.3	36.1	35.0
	Some college	20.1	23.0	16.9
	College graduate	25.8	22.9	16.4
	Unknown	0.2	0.7	0.0
MARITAL STATUS:	Ever married	77.0	76.9	69.4[c,d]
	Never married	22.7	23.0	30.6
	Unknown	0.3	0.1	0.0
HOUSEHOLD INCOME:	< $10,000	15.3	13.5	30.4[c]
	$10,000 - 14,999	12.5	9.6	14.9
	$15,000 - 19,999	11.9	14.6	13.6
	$20,000 - 24,999	12.1	11.4	11.9
	$25,000 - 34,999	17.8	19.5	15.3
	$35,000 - 50,000	14.6	13.5	8.9
	$50,000 +	15.8	17.9	5.2
REGION:	New York City	41.5	39.0	40.5[a]
	Rest of state	58.5	61.0	59.5

In 1986, 486 males and 672 females were surveyed, while in 1987, the survey included 471 males and 717 females. Distributions of age and income for both 1986 and 1987 exclude respondents with unknown values for these variables.

[a] 1985 population estimates, New York State Commerce Department.
[b] Percent distribution based on people ages 18 years and over.
[c] 1980 U.S. census data for New York State.
[d] People ages 15 and over.

ALCOHOL

by

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Introduction

The relationship of alcohol consumption to health consequences is complex. Alcohol as a health risk factor must be viewed from the perspective of its multiple effects. First, alcohol is a central nervous system depressant. In moderate doses, alcohol causes impaired judgement and motor ability that can result in injury to self and others. In larger doses, acute illness and death can occur. Second, alcohol is a toxic substance which can cause tissue damage. With repeated heavy doses, organ damage can occur. Alcohol is also addictive in that the body develops tolerance, requiring larger doses to obtain the desired effects. With sustained heavy doses, psychological dependence can develop. Physiological addiction also occurs, resulting in the onset of withdrawal symptoms when alcohol is not consumed.

Reaction to alcohol depends on the interaction of 1) dose, including quantity and frequency of consumption; 2) setting, including many situations in which impaired functioning creates risk of injury; and, 3) disposition of the host, including genetics as well as the physical condition of the host. Overall, it is estimated that each year in New York State alcohol is a contributing factor in over 7,000 deaths, more than 1.3 million days of hospital care, 760,000 emergency room visits and in excess of 100,000 years of productive life lost (1).

In order to assess risk and develop intervention programs, it is essential to determine the alcohol consumption patterns related to increased risk of negative health consequences. Estimation of the alcohol consumption profile of any population is not possible from existing observational data or from official sales records. The measure most commonly used for "apparent consumption" is based on the state alcohol beverage tax records representing wholesale removals of legal beverages. This measure provides only a statewide total sales figure and, with certain assumptions, allows an estimation of per capita consumption. People fourteen years of age and older have traditionally been used to determine per capita consumption. Data show that in 1987, New Yorkers fourteen years of age and older consumed an average of 25.4 gallons of beer, 3.8 gallons of wine and 2.3 gallons of distilled spirits per person. These figures represent an average of 550 typical drinks per year or an estimated average daily consumption of approximately 1.5 drinks per day.

These data provide only a crude estimate of total consumption. In order to determine health risk, it is necessary to identify specific alcohol consumption behaviors. First, the incidence of health problems related to impairment of judgement and motor ability is in part a function of the frequency of episodes of drinking to intoxication. The risk associated with alcohol impairment is also a function of exposure to situations in which injury can occur, such as when driving. The toxic effects of alcohol are primarily a function of the quantity and frequency of consumption. However, toxic effect can also occur as a result of acute exposure in the case of certain highly susceptible hosts such as a developing fetus. The risk of addictive effects of alcohol are more complicated and include long term drinking patterns as well as psychological and physiological susceptibility factors. Alcohol consumption patterns alone provide less insight into the prevalence of addiction.

Survey Results

The BRFSS contains data that can be used to determine the incidence of drinking to intoxication, drinking in specific high risk situations and drinking by susceptible hosts and to determine the prevalence of chronic drinking at levels that might increase risk of health consequences. Please note that prevalence rates of alcohol risk factors for the 1983 and 1985 BRFSS as presented in the previously published NYSDOH Monograph No. 22 were based on "drinkers," that is, those who reported drinking at least once in the month prior to the interview. The current report presents rates based on total weighted sample size thus representing estimated population prevalence of risk. The reader is therefore cautioned in comparing the findings of the two reports as the denominators for the calculation of rates are not equivalent.

Acute Drinking - Prevalence of drinking to intoxication (acute drinking) is determined by reported episodes of drinking five or more drinks on a single occasion. The consumption of five drinks over a two to three hour span would result in a blood alcohol concentration of approximately 0.10 percent, the legal definition of intoxication for purposes of driving while intoxicated offenses. The actual level that results in impairment sufficient to cause risk is significantly lower. Significant impairment of complex motor tasks has been demonstrated at levels as low as 0.02 percent to 0.03 percent.

In 1986, 15.9 percent of the survey sample reported consuming five or more drinks on at least one occasion in the month prior to the survey. There was a slight decrease to 13.5 percent in 1987. Males were more than four times more likely than females to report at least one episode of acute drinking (26.3 percent vs. 6.9 percent in 1986; 22.5 percent vs. 5.7 percent in 1987). Rates of acute drinking risk are highest among the youngest age groups. In 1986, 27.5 percent of 18-24 year olds reported at least one episode of acute drinking. In 1987, the rate decreased to 20.9 percent (Table 1). Both age and education were inversely related to acute drinking during 1986 and 1987.

In 1986, whites reported much higher rates of acute drinking than did nonwhites. This difference was not evident in the 1987 sample. Reported acute drinking was twice as common in those who were never married as compared to married or divorced individuals, while there was no apparent relationship between income and acute drinking.

Chronic Alcohol Use - Average daily consumption of two or more drinks (chronic drinking) is determined by a reported total of 60 or more drinks in the previous month when the number of drinking occasions is multiplied by the average drinks per occasion.

In 1986, 7.4 percent of the sample reported drinking in excess of two drinks per day (60 drinks/month) compared to 5.2 percent in 1987. Males were significantly more likely than females (1986: z=6.243, p<0.001; 1987: z=6.284, p<0.001) to report chronic alcohol consumption. Unlike acute drinking, the youngest age groups were not at highest risk. Relatively large confidence limits might explain this difference, however, in 1986, whites exhibited the highest rate of chronic drinking, but in 1987 blacks and all others reported higher rates.

As shown in Table 2, there was no clear relationship between either education or income and chronic drinking, nor were there differences between New York City and the rest of the state.

Drinking and Driving - Driving after drinking is determined by reported operation of a motor vehicle after having "too much" to drink. Less than three percent of respondents in both 1986 and 1987 reported driving after drinking. As with other drinking risk factors, males demonstrated a greater rate of drinking and driving, as did younger respondents and those who have never been married (Table 3). These findings are consistent with the profile of the "typical" drinking driver, e.g., young single male.

While the rates of reported driving after drinking might seem low, it should be noted that the data do not select for licensed drivers or for those who drove any time in the reported period. Even with these intervening variables, extrapolating these rates to the state population results in an estimate of more than 285,000 individuals who engage in driving after drinking at least once in a one-month period. This estimate is more meaningful in light of an annual occurrence of more than 60,000 driving while intoxicated arrests and over 15,000 fatal or injury crashes involving drinking drivers.

Discussion/Recommendations

A number of health consequences related to use and abuse of alcohol are highlighted above. The BRFSS provides some insight into the extent and nature of alcohol use in New York. The per capita consumption estimates discussed in the introduction are clarified somewhat by the survey data. While sales data would imply an average consumption of about 1.5 drinks per day, the survey reveals that fewer than one in ten New Yorkers report consuming more than two drinks per day. Furthermore, in the 1987 survey 35 percent of males and more than 50 percent of females were essentially abstainers, that is, reported drinking no alcohol in the 30 days prior to the survey. In light of this, it is evident that a relatively small portion of the population are very heavy consumers of alcohol and account for a major share of the total alcohol consumed. It is less clear that these same individuals are over-represented in all types of alcohol-related health problems. In fact, some alcohol-related problems result from very low levels of consumption at times of extreme risk, e.g., fetal damage from consumption during pregnancy.

Initiatives designed to prevent alcohol-related health problems must be as complex and varied as the effects of alcohol and the problems related to it. Public information and education about risk must address both the concepts of acute and chronic consumption levels, as well as the risks associated with any use in certain situations, driving, and by certain individuals, pregnant women or children of alcoholics (2,3).

Table 1.

1986 and 1987 BRFSS - NEW YORK STATE
PERCENT OF RESPONDENTS AT RISK FROM ACUTE INTOXICATION
BY SELECTED SOCIODEMOGRAPHIC CHARACTERISTICS

	1986		1987	
	%	(+/-) C.I.*	%	(+/-) C.I.*
TOTAL:	15.9	3.2	13.4	2.9
SEX:				
Male	26.3	5.9	22.5	5.7
Female	6.9	2.9	5.7	2.6
AGE:				
18-24 years	**27.5	11.9	**20.7	10.4
25-34	19.0	7.0	23.0	7.5
35-44	19.4	7.8	14.4	6.5
45-54	17.5	9.1	7.5	6.8
55-64	7.1	6.3	5.9	5.6
65+	2.8	3.3	4.6	4.1
RACE/ETHNICITY:				
White, not Hispanic	18.1	3.9	13.8	3.3
Black, not Hispanic	8.8	7.3	12.8	8.4
All other	8.4	6.5	12.0	9.2
EDUCATION:				
< High School	**14.4	6.9	**9.3	6.1
High School graduate	14.9	5.4	12.7	4.9
Some college	16.0	6.8	15.0	6.2
College graduate	18.0	6.4	15.9	6.4
MARITAL STATUS:				
Married	15.3	4.4	11.5	3.8
Sep/Div/Wid	9.8	4.9	9.0	4.7
Never married	22.1	7.8	22.0	7.8
INCOME:				
< $15,000	11.5	5.5	11.0	5.6
$15,000-$24,999	20.2	8.1	17.1	7.1
$25,000-$34,999	19.2	9.2	14.0	7.8
$35,000+	19.6	7.1	15.5	6.3
REGION:				
New York City	12.3	4.2	10.5	4.2
Rest of State	18.4	4.5	15.3	4.0

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*Exact 95% confidence intervals are presented for the categories "total" and "sex;" all other 95% confidence intervals are estimated (see Methods section).

**p<0.05, t-test for trend.

Table 2.

1986 and 1987 BRFSS - NEW YORK STATE
PERCENT OF RESPONDENTS AT RISK FROM CHRONIC ALCOHOL USE BY SELECTED SOCIODEMOGRAPHIC CHARACTERISTICS

	1986		1987	
	%	(+/-) C.I.*	%	(+/-) C.I.*
TOTAL:	7.4	2.3	5.2	1.9
SEX:				
Male	12.4	4.4	9.8	4.0
Female	3.1	2.0	1.3	1.2
AGE:				
18-24 years	9.3	7.7	7.3	6.7
25-34	7.0	4.6	7.2	4.6
35-44	8.3	5.4	4.4	3.8
45-54	14.1	8.3	0.0	0.0
55-64	3.4	4.4	5.1	5.2
65+	2.4	3.0	6.2	4.7
RACE/ETHNICITY:				
White, not Hispanic	8.1	2.7	4.8	2.1
Black, not Hispanic	4.1	5.1	6.9	6.4
All other	6.1	5.6	7.0	7.2
EDUCATION:				
< High School	5.4	4.5	3.8	4.0
High School graduate	7.7	4.0	6.9	3.7
Some college	7.6	4.9	4.4	3.6
College graduate	8.2	4.6	4.2	3.5
MARITAL STATUS:				
Married	7.2	3.1	4.4	2.4
Sep/Div/Wid	6.3	4.0	4.0	3.2
Never married	8.8	5.4	8.4	5.2
INCOME:				
< $15,000	5.0	3.7	5.2	4.0
$15,000-$24,999	6.6	5.0	5.3	4.2
$25,000-$34,000	10.3	7.1	5.5	5.1
$35,000+	10.5	5.5	5.6	4.0
REGION:				
New York City	5.9	3.0	5.0	2.9
Rest of State	7.4	3.1	5.4	2.5

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*Exact 95% confidence intervals are presented for the categories "total" and "sex;" all other 95% confidence intervals are estimated (see Methods section).

Table 3.

1986 and 1987 BRFSS - NEW YORK STATE
PERCENT OF RESPONDENTS AT RISK FROM DRINKING AND DRIVING
BY SELECTED SOCIODEMOGRAPHIC CHARACTERISTICS

	1986		1987	
	%	(+/-) C.I.*	%	(+/-) C.I.*
TOTAL:	2.0	1.2	2.2	1.3
SEX:				
Male	4.0	2.6	4.4	2.8
Female	0.3	0.6	0.4	0.7
AGE:				
18-24 years	2.2	4.0	7.1	6.6
25-34	4.7	3.8	3.6	3.3
35-44	1.1	2.1	1.0	1.9
45-54	2.1	3.4	0.0	0.0
55-64	0.7	2.0	0.2	1.0
65+	0.0	0.0	0.5	4.4
RACE/ETHNICITY:				
White, not Hispanic	2.6	1.6	2.4	1.5
Black, not Hispanic	0.3	1.5	0.8	2.2
All other	0.0	0.0	2.5	4.4
EDUCATION:				
< High School	1.1	2.1	0.0	0.0
High School graduate	1.8	2.0	2.3	2.2
Some college	3.4	3.4	2.6	2.8
College graduate	1.6	2.1	3.5	3.2
MARITAL STATUS:				
Married	1.9	1.7	1.0	1.2
Sep/Div/Wid	0.9	1.6	1.7	2.1
Never married	3.0	3.2	5.8	4.4
INCOME:				
< $15,000	0.7	1.4	0.5	1.2
$15,000-$24,999	3.4	3.6	2.9	3.2
$25,000-$34,000	3.5	4.3	3.0	3.8
$35,000+	2.4	2.7	2.4	2.7
REGION:				
New York City	1.2	1.4	0.6	1.1
Rest of State	2.5	1.8	3.3	2.0

*Exact 95% confidence intervals are presented for the categories "total" and "sex;" all other 95% confidence intervals are estimated (see Methods section).

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CHOLESTEROL

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Introduction

Coronary heart disease (CHD) is a term used to identify several cardiac disorders resulting from inadequate blood circulation to local areas of heart muscle. This deficiency is usually the consequence of atherosclerotic obstruction of the coronary arteries. Despite recent declines, CHD continues to account for more deaths annually than any other disease or group of diseases. More than 1.25 million heart attacks occur each year in the United States, and more than 500,000 people die as a result (1). Coronary heart disease also represents a significant public health issue in terms of morbidity. The Social Security Administration ranks CHD as the number one reason for Social Security disability (2). The National Heart, Lung, and Blood Institute (NHLBI) reports that direct health care expenditure and lost productivity due to morbidity and mortality from CHD totaled an estimated 49 billion dollars in 1985 (3).

There are many causes of CHD and an individual's susceptibility is influenced by a combination of genetic and environmental factors. These risk factors include cigarette smoking, hypertension, elevated blood cholesterol, obesity and diabetes. The relationship between high blood cholesterol and increased CHD risk has been established by extensive clinical evidence and supported by animal, epidemiologic and metabolic studies (4,5). One of the studies, the Lipid Research Clinics Coronary Primary Prevention Trial (LRC-CPPT), showed a statistically significant 19 percent reduction in the combined rate of fatal and nonfatal coronary heart disease in association with a 9 percent decrease in blood cholesterol level (6). The CPPT further demonstrated that a 1 percent reduction in blood cholesterol levels results in a 2 percent decline in CHD incidence (7).

A panel convened by the National Institutes of Health (NIH) at the Consensus Development Conference on Lowering Blood Cholesterol in 1984 reviewed the range of evidence linking blood cholesterol levels to CHD and unanimously concluded that lowering the blood cholesterol level will reduce the risk of heart attacks attributable to CHD (4). Their recommendations included the identification and treatment of adults with moderate or high risk levels of blood cholesterol, the management of risk factors including diet, cholesterol education for the public and medical professionals, and blood cholesterol measurements by physicians.

In November 1985 the National Cholesterol Education Program (NCEP) was initiated by the NHLBI with the goal of decreasing the prevalence of elevated blood cholesterol in the United States in order to help reduce CHD morbidity and mortality rates. The focus of the NCEP is on public education and its central theme is "Know your number." Individuals are encouraged to ask about blood cholesterol when they see their doctor; to have their cholesterol tested if they have not already done so; to know their cholesterol level in numbers; and to learn whether their blood cholesterol level needs to be lowered.

Survey Results

Information from the 1987 BRFSS was used to determine the proportion of adults in New York State who had taken steps similar to the NCEP guidelines for cholesterol testing and awareness. Additional questions asked in the 1987 BRFSS shed light on the attitudes and practices of health professionals in New York State. Questions in the cholesterol section of the 1987 BRFSS were addressed to three respondent groups: 1) all respondents, 2) those who had their cholesterol checked, and 3) those who had their cholesterol checked and were told their cholesterol level in numbers. Responses to the questions that were not addressed to all respondents were analyzed both as the percentage within the group and as the percentage of all respondents in the survey.

Cholesterol Testing and Awareness - All respondents in the 1987 BRFSS were asked whether they ever had their cholesterol checked. The results in Table 1 show that 35.9 percent of New York State respondents to the BRFSS reported having their cholesterol level checked at some time. The proportion who had their cholesterol checked increases with age, but there were no significant differences when the results were analyzed by sex, race, educational attainment, marital status, income and region in New York State.

Respondents who had their cholesterol checked at some time were asked to report how long it had been since it was last checked. Nearly three-quarters (74.0 percent) reported they had their cholesterol checked within the past year and 90.7 percent reported they had it checked within the past two years.

Respondents were asked whether they were told their blood cholesterol level in numbers; 26.3 percent of those who had their cholesterol checked at some time reported being told their number. When this result was analyzed as the proportion of all respondents in the survey, 8.6 percent of respondents had been told their cholesterol number.

Respondents were also asked to report their cholesterol number, and 45.3 percent of those who had a cholesterol check-up and told their number were able to report the number. When this result was analyzed as the proportion of all respondents in the survey, 3.9 percent of all respondents were able to report their cholesterol number.

Health Professional Attitudes and Practice - Eight and one-half percent of respondents were under a doctor's advice to reduce their blood cholesterol level. Among those who had their cholesterol level checked at some time, 16.2 percent reported that a doctor or other health professional told them their level was high. When this result was analyzed as the proportion of all respondents in the survey, 5.2 percent of all respondents to the New York State BRFSS had been told by a doctor or other health professional that their blood cholesterol level was high.

Discussion/Recommendations

The proportion of adults among all 1987 BRFSS participating areas who reported having their cholesterol level checked ranged from 29 to 57 percent with a median of 47 percent (8). This compares to 35.9 percent of New York State BRFSS respondents who report having had their cholesterol checked at some time. A national survey conducted jointly by NHLBI and the Food and Drug Administration (FDA) in 1986 reported that 46 percent of adults responded that they had their blood cholesterol checked (9).

Additional results from the 1987 BRFSS indicate that New York State could do better in the area of cholesterol testing and awareness. In New York State, 8.6 percent of adults recalled being told their cholesterol number. The proportion among all 1987 BRFSS participating areas who recalled being told their cholesterol level ranged from three to 29 percent with a median of 19 percent (8). Similarly, just 3.9 percent of adults in New York State were able to report their cholesterol number, while the proportion able to do so from other participating areas ranged from 1 to 9 percent, with a median value of 6 percent (8). In the 1987 nationwide survey conducted by NHLBI and FDA, 7 percent of respondents reported knowing their blood cholesterol level (9).

It is encouraging to find that 90.7 percent of adults who had their cholesterol checked in New York State have done so within the past two years. These results are likely to be reflective of the recent emphasis on cholesterol and coronary heart disease risk factors and the increased availability of cholesterol screening sites across New York State.

A large segment of the adult population in the United States has elevated blood cholesterol and should be under a doctor's care to reduce it. Findings from a nationwide survey, summarized by the National Health Center for Health Statistics (10), indicates that approximately 60 percent of the adult population have a blood cholesterol above the desirable level of 200 milligrams per deciliter (mg/dl) and 27 percent have levels of 240 mg/dl or greater (10). According to the Consensus Conference report, approximately 25 percent of adults will eventually be diagnosed as having high blood cholesterol levels (4). Results from the 1987 BRFSS indicate that 8.5 percent of adults in New York State are under a doctor's advice to reduce their blood cholesterol and 5.2 percent were told that their cholesterol level was high. Nationwide, 8 percent of adults have been told by a physician that their blood cholesterol is high (9). With increasing emphasis on changing the attitudes and practice of health professionals, it is expected that more adults in New York and across the nation will come under a doctor's care for the condition.

In the 1987 BRFSS, only 26.3 percent of New York State adults who had their cholesterol level checked at some time recalled having been told their cholesterol number. Less than half of those who had a cholesterol check-up and were told their number were able to report their cholesterol level. These findings suggest that health professionals need to emphasize to the patient the importance of knowing and remembering the cholesterol number. A written record of the cholesterol level and its significance which can be carried by the patient is suggested as a possible aid to recall.

There are signs that physicians' attitudes and practices with regard to the risk of elevated levels of serum cholesterol are changing in the United States. NHLBI sponsored two separate nationwide surveys of practicing physicians in 1983 and 1986 (11) and the results showed a number of positive changes. For instance, between 1983 and 1986 the proportion of physicians responding that reducing elevated blood cholesterol has a large effect on the risk of CHD increased from 39 to 64 percent. The proportion who strongly agreed that serum cholesterol levels in American adult males are too high for long-term health increased from 41 to 60 percent. Physicians were also found to be prescribing diet and drug therapy to control serum cholesterol more frequently and to have initiated treatments at lower cholesterol levels. It is likely that these same changes in attitudes and practices are occurring among physicians in New York State and may be reflected in the results of future surveys.

The American Heart Association (AHA) has become actively involved in physician education through the Physician's Cholesterol Education Programs implemented across the country and in New York State. The objectives of this program are:

- To increase physician awareness of the importance of cholesterol in atherosclerosis and of the importance of detecting and treating elevated blood cholesterol;
- To increase physician knowledge of how to detect, treat, manage and provide counseling to patients with elevated blood cholesterol;
- To increase the proportion of physicians providing standardized cholesterol measurements.

The New York State Department of Health has launched a statewide campaign that complements the efforts of the NHLBI's National Cholesterol Education Program to increase public education and awareness and to improve the attitudes and practices of health professionals in the area of cholesterol testing. The New York State Healthy Heart Program began in

April 1988 with initiatives aimed at the prevention of all cardiovascular diseases with emphasis on the control of modifiable risk factors: smoking, high blood pressure and elevated serum cholesterol. The four major components of the Healthy Heart Program include: 1) Community Intervention Programs in eight high-risk communities across the state; 2) eight Cardiovascular Risk Management Programs; 3) a program of professional education and training; and 4) a statewide marketing/media campaign.

The New York State Healthy Heart Program and the Physician's Cholesterol Education Program sponsored by the AHA are recent efforts aimed at improving public education and awareness and the attitudes and practices of health professionals. These programs are complementary to the guidelines set forth by the National Cholesterol Education Campaign. It is anticipated that such efforts in New York State will create changes in the population and among health professionals toward lowering the risk for coronary heart disease.

Table 1.

1987 BRFSS - NEW YORK STATE WEIGHTED PERCENT OF ADULTS WHO REPORTED HAVING THEIR CHOLESTEROL LEVEL CHECKED BY SELECTED SOCIODEMOGRAPHIC CHARACTERISTICS

	%	(+/-) C.I.*
TOTAL:	35.9	4.3
SEX:		
Male	35.7	6.8
Female	36.1	5.6
AGE:		
18-24 years	**17.1	10.2
25-34	25.9	8.0
35-44	31.5	9.0
45-54	39.5	13.3
55-64	51.0	12.3
65+	57.2	10.4
RACE/ETHNICITY:		
White, not Hispanic	37.1	4.9
Black, not Hispanic	32.4	12.6
All other	30.3	13.6
EDUCATION:		
< High School	44.8	10.9
High School graduate	28.4	6.9
Some college	31.4	8.7
College graduate	45.3	9.1
MARITAL STATUS:		
Married	37.4	6.1
Sep/Div/Wid	40.5	8.5
Never married	28.3	8.9
INCOME		
< $15,000	38.7	9.2
$15,000-$24,999	31.8	9.3
$25,000-$34,999	33.9	11.1
$35,000+	47.9	9.1
REGION:		
New York City	39.0	7.0
Rest of State	35.5	5.6

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*Exact 95% confidence intervals are presented for the categories "total" and "sex;" all other 95% confidence intervals are estimated (see Methods section).

**p<0.001, t-test for trend.

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HYPERTENSION

by

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Introduction

Hypertension, or high blood pressure, is a serious health problem that significantly increases the risk of premature illness, disability and death. It is the primary cause of more than 1,400 deaths in New York State each year and contributes to 80,000 deaths annually from heart attacks and strokes, two of the three leading causes of death in our State.

Based on data collected by the 1976-1980 National Health and Nutrition Examination Survey (Table 1), hypertension affects 30 percent of the population. The prevalence of hypertension rises steadily with age and is greater among males. Blacks are more likely than whites to develop high blood pressure and the condition is usually more severe.

Table 1.

Hypertension prevalence rates by sex, race and age in the United States civilian, noninstitutionalized population (ages 18-74 years), 1976-80 (1)

	Male			Female			Total		
Age (years)	White (%)	Black (%)	All (%)	White (%)	Black (%)	All (%)	White (%)	Black (%)	All (%)
18-24	16.2	10.9	15.2	2.3	9.6	3.5	9.1	10.2	9.2
25-34	21.2	23.2	20.9	5.7	15.3	6.9	13.3	18.8	13.7
35-44	26.4	44.2	28.4	16.6	37.0	19.3	21.3	40.1	23.7
45-54	42.6	55.2	43.7	36.3	67.4	39.1	39.4	61.7	41.3
55-64	51.4	66.3	52.6	50.0	74.3	52.6	50.6	70.7	52.6
65-74	59.2	67.1	60.2	66.2	82.9	67.5	63.1	76.1	64.3
All ages	32.6	37.9	33.0	25.3	38.6	26.8	28.8	38.2	29.8

The risks associated with elevated blood pressure can be reduced through a variety of antihypertensive regimens, including medications and non-pharmacologic approaches. Numerous clinical trials have established the effectiveness of antihypertensive drugs in lowering blood pressure, and the associated risk of morbidity and premature mortality.

Non-pharmacologic approaches - particularly weight reduction, salt restriction, reduced alcohol consumption and exercise - may also lower blood pressure and improve the efficacy of medications. These lifestyle changes may also have an independent effect on lowering cardiovascular disease.

The diagnosis of hypertension should be established on the basis of multiple readings on different occasions. The Joint National Committee on the Detection, Evaluation and Treatment of High Blood Pressure recommends that initial elevated readings be confirmed on at least two subsequent visits, with average levels of diastolic pressure of at least 90 mmHg or systolic pressure of at least 140 mmHg required for diagnosis. The objective of therapy is to achieve and maintain arterial blood pressure below 140/90 mmHg.

The management of hypertension has undergone a steady evolution over the last two decades as new data are published from clinical trials, epidemiologic investigations, drug studies and basic research. These data have been carefully reviewed by the above-mentioned Joint National Committee and published in four reports beginning in 1977 (2-5).

The most recent Joint National Committee Report (5), released in May 1988, has broadened the step-care approach to provide more flexibility for clinicians as well as to encourage involvement of the patient in the treatment program. It places a greater emphasis on the control of other cardiovascular risk factors and includes discussion of the new cholesterol guidelines. Given the current interest in dietary supplements to reduce cardiovascular risk, the relative benefits of calcium and fish oil are addressed. Finally, the report updates information on antihypertensive medications and their recommended doses, and suggests that step-down therapy, after blood pressure has been controlled, may be considered in certain patients.

Remarkable changes have occurred in the control of hypertension since the early 1970s when an effort was begun across the country to screen people for high blood pressure and educate the public about the associated risks. People are more knowledgeable about high blood pressure, more likely to visit a physician for hypertension, and more likely to follow medical advice. These changes have been accompanied by dramatic declines in mortality from stroke and coronary artery disease. In New York State, stroke mortality has decreased 50 percent since 1972 and now ranks thirty-ninth when compared to all other states. In fact, New York City, where a major effort to detect and treat high blood pressure has been underway since the late 1970s, now has the lowest age-adjusted stroke mortality rate in the nation.

Survey Results

Prevalence - Hypertensives included all respondents who reported they have been told their blood pressure is high more than once, or are on medication, or report their blood pressure is still high. Based on this definition, consistent with the one used by the National Heart, Lung and Blood Institute, hypertension was reported by 16.1 percent of 1986 respondents and 12.3 percent of 1987 respondents (Table 2). The decrease in overall prevalence from 1986 to 1987 was not significant.

A significant difference in hypertension prevalence was observed between age groups, with higher rates associated with increasing age. In each of the surveys, prevalence rates were inversely associated with educational level, although this difference was only significant in 1987. All other subgroup differences were not large enough to reach statistical significance.

Nearly one in five (19.5 percent) respondents in 1986 reported they had ever been told their blood pressure was high; in 1987, this proportion was 7.2 percent (Table 3). Awareness rates have generally exceeded the percentage of current hypertensives because a diagnosis of hypertension requires persistent elevation of blood pressure on repeated visits to medical care. Finally, the proportion of diagnosed hypertensives who report their blood pressure is still high was 20.9 percent in 1986 and 13.5 percent in 1987.

Respondents who have been told their blood pressure is high at least once were informed of this by a physician (97 percent). About 40 percent said their blood pressure was presently elevated in 1986, increasing to 51.6 percent in 1987.

Treatment - In 1986, 61.1 percent of hypertensives reported that they were on a prescribed medication. This proportion dropped slightly to 55.7 percent in 1987, with the change attributable to a large drop in males (54.3 percent versus 41.0 percent, respectively). In both years, about two-thirds of females were on a prescribed medication. A question was included in the 1986 survey that asked if the respondent was currently taking his/her medicine; 89.2 percent reported "most times" and the remaining 10.8 percent reported "occasionally."

At least three-quarters of hypertensives were following a low-salt diet, and were watching their weight and/or avoiding stress to reduce their blood pressure. Less than one-third (28.7 percent) were following an exercise program. Fewer than half of smokers were cutting down or stopping smoking as a means of controlling high blood pressure. A summary of the responses to 1986 BRFSS questions about non-pharmacologic therapy for high blood pressure is shown in Table 4.

Discussion/Recommendations

The self-reported prevalence rates of high blood pressure are lower in New York State residents than the United States sample included in the

National Health and Nutrition Examination Survey. However, self-reported prevalence underestimates true prevalence for two important reasons. First, people who have elevated blood pressure, but are unaware of their condition, are not included. Although awareness rates have climbed over the last decade, undetected hypertensives are not counted in surveys relying on self-reported data. Secondly, criteria for diagnosing people as hypertensive have changed and may not be uniformly applied by all practitioners. Thus, people with blood pressures in the range of 140/90 - 160/95 mmHg who were formerly considered borderline hypertensive, are now classified as hypertensive by current recommendations (5).

Table 4.

1986 BRFSS - NEW YORK STATE
PERCENT OF RESPONDENTS WHO REPORTED
NON-PHARMACOLOGIC TREATMENT OF HYPERTENSION
AMONG DIAGNOSED HYPERTENSIVES

Treatment	Males	Females	Total
Low salt diet	73.0	85.3	80.4
Watching weight	75.8	76.0	75.9
Avoiding stress	76.4	81.8	79.6
Cutting down or quitting smoking	47.5	48.2	47.9
Exercise	32.4	26.2	28.7

The survey data revealed differences in the prevalence of hypertension among various sociodemographic groups. The proportion of current hypertensives increased dramatically in older age groups. Failure to identify other significant differences may be due to the small sample size.

The data displayed for various subgroups provide general estimates of the proportion of New York State residents who have been diagnosed with high blood pressure. When combined with national prevalence rates summarized earlier, this information can provide clinicians, health planners and other health professionals with a general profile of the hypertensive status of the New York State population.

Table 2.

1986 and 1987 BRFSS - NEW YORK STATE PERCENT OF RESPONDENTS WHO ARE CURRENT HYPERTENSIVES BY SELECTED SOCIODEMOGRAPHIC CHARACTERISTICS

	1986		1987	
	%	(+/-) C.I.*	%	(+/-) C.I.*
TOTAL:	16.1	3.2	12.3	2.8
SEX:				
Male	13.4	4.6	9.8	4.0
Female	18.4	4.5	14.5	3.9
AGE:				
18-24 years	**1.9	11.5	**0.0	-
25-34	4.4	3.7	4.0	11.1
35-44	9.2	5.7	10.7	5.7
45-54	22.1	10.0	14.0	8.9
55-64	26.7	10.8	19.9	9.5
65+	38.3	9.6	29.5	8.9
RACE/ETHNICITY:				
White, not Hispanic	17.1	3.8	13.1	3.2
Black, not Hispanic	18.5	10.1	15.0	9.1
All other	8.2	6.5	3.5	5.1
EDUCATION:				
< High School	22.5	8.3	21.1	8.5
High School graduate	16.2	5.6	13.3	4.9
Some college	14.2	6.5	9.5	5.1
College graduate	13.1	5.7	7.5	4.6
MARITAL STATUS:				
Married	17.3	4.6	11.8	3.8
Sep/Div/Wid	24.4	7.1	20.6	6.6
Never married	6.7	14.9	6.9	4.8
INCOME:				
< $15,000	23.5	7.2	21.8	7.4
$15,000-24,999	10.8	6.2	9.3	5.5
$25,000-34,999	12.1	7.6	9.9	6.7
$35,000+	14.2	6.2	9.9	5.1
REGION:				
New York City	15.6	4.7	13.7	4.4
Rest of State	16.5	4.4	13.7	3.6

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*Exact 95% confidence intervals are presented for the categories "total" and "sex;" all other 95% confidence intervals are estimated (see Methods section).

**p<0.05, t-test for trend.

Table 3.

1986 and 1987 BRFSS - NEW YORK STATE
PERCENT OF RESPONDENTS EVER TOLD THEY ARE HYPERTENSIVE
BY SELECTED SOCIODEMOGRAPHIC CHARACTERISTICS

	1986		1987	
	%	(+/-) C.I.*	%	(+/-) C.I.*
TOTAL:	19.5	3.4	17.3	3.2
SEX:				
Male	16.5	5.0	16.9	5.1
Female	22.0	4.7	17.6	4.2
AGE:				
18-24 years	**4.1	5.8	**4.9	5.5
25-34	7.3	4.6	9.8	5.3
35-44	12.9	6.6	12.7	6.2
45-54	24.4	10.3	22.7	10.8
55-64	33.0	11.5	23.2	10.0
65+	41.6	9.8	34.1	9.3
RACE/ETHNICITY:				
White, not Hispanic	20.1	4.0	17.7	3.7
Black, not Hispanic	24.5	11.2	24.2	10.8
All other	10.7	7.3	6.5	6.9
EDUCATION:				
< High School	28.2	8.9	26.5	9.2
High School graduate	20.5	6.1	18.1	5.6
Some college	16.5	6.9	14.8	6.2
College graduate	14.6	5.9	11.6	5.6
MARITAL STATUS:				
Married	20.3	4.9	17.2	4.5
Sep/Div/Wid	30.6	7.6	24.6	7.0
Never married	8.7	5.3	11.4	6.0
INCOME:				
< $15,000	28.7	7.7	29.6	8.1
$15,000-24,999	15.3	7.2	18.9	7.4
$25,000-34,999	14.0	8.1	12.0	7.3
$35,000+	16.5	6.6	14.2	6.0
REGION:				
New York City	19.3	5.1	16.8	5.0
Rest of State	19.6	4.7	17.6	4.2

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*Exact 95% confidence intervals are presented for the categories "total" and "sex;" all other 95% confidence intervals are estimated (see Methods section).

**$p<0.05$, t-test for trend.

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MAMMOGRAPHY

by

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Introduction

Breast cancer is a major cause of morbidity and mortality among women. In New York State, nearly 10,000 new cases are diagnosed each year and approximately 4,000 women die from breast cancer annually. Breast cancer mortality has remained fairly stable over the past two decades; incidence, however, has been slowly rising (Figure 1). A wealth of scientific evidence suggests that increased use of screening mammography can significantly reduce the number of deaths attributed to breast cancer.

The initial scientific work affirming the benefit of mammography was based on the Health Insurance Plan (HIP) of Greater New York (1). This clinical trial was comprised of 62,000 women who were randomly assigned to either a screening or control group. Over a four-year period, the 31,000 women assigned to the screening group received annual mammographic and physical breast examination, while the 31,000 assigned to the control group followed their usual medical routine. A statistically significant reduction in breast cancer mortality was observed among screened women who were ages 50-79 at the time they entered the study. However, no significant reductions in breast cancer mortality were initially observed in women under 50.

A recent report from this clinical trial reporting on 10-14 years of follow-up showed continuing benefit for the screened women ages 50-79 (2). Also, women under age 50 who initially appeared to derive little benefit from screening began to show significant reductions in breast cancer mortality after follow-up for 10-14 years.

The results reported by HIP have been confirmed in several other studies. Data from two nonrandomized studies conducted in Nijemen (3) and Utrecht, Netherlands (4) indicate that regular mammographic screening, without physical examination, significantly reduces breast cancer mortality. These results, however, are reported in the context that nonrandomized studies can lead to both selection bias and potential overestimates of screening benefits.

A randomized, controlled trial conducted in Sweden has shown a 31 percent reduction in breast cancer mortality among women receiving periodic single view mammograms (5). It is interesting to note that while the results show benefit for women ages 50-74, this was not reflected in the younger age group.

The Swedish and Dutch studies provide support for the original HIP findings. Furthermore, they demonstrate the independent benefit of mammography screening which could not be determined in the HIP study due to its study design which included clinical examination of the breast. Additional randomized breast cancer screening trials are now underway in Canada (6), Scotland (7) and the United Kingdom (8).

Survey Results

Analysis of 1987 BRFSS data was restricted to the 382 female respondents 40 years of age and older since women of these ages have been reported to experience reductions in breast cancer mortality from an annual or at least a biannual mammogram.

Almost all female respondents ages 40 and over reported having heard of a mammogram (Figure 2). There were no statistically significant differences in the proportion of women who reported having heard of a mammogram by age, race, education or income. Among the 349 women who had heard of a mammogram, 51.1 percent reported ever having had a mammogram (Figure 2). In the various age, race, education or income groupings, there were no significant differences in the proportion of women who reported ever having received a mammogram.

A smaller proportion of women ages 40-49 (64.0 percent) compared to women ages 50 and over (74.8 percent) reported a routine checkup as their reason for receiving a mammogram (Figure 3). Thirty percent of women ages 40-49 compared to 17.8 percent of women ages 50 and over reported a breast problem as their reason for receiving a mammogram. There were no differences in the proportions of women in either age group who reported receiving a mammogram due to breast cancer.

Women ages 40 and over who reported a previous mammogram were queried regarding the interval since their last mammogram. Almost 58 percent reported having received their last mammogram within the past year. An additional 15.2 percent reported that it had been 1-2 years since their last mammogram, while 27.1 percent had not received a mammogram in more than two years (Figure 4).

In order to determine the proportion of women who had received a screening mammogram among women who had access to preventive health care, further analyses were limited to women who had seen a physician during the past year. Also, only women who reported that they received their mammogram as part of a routine checkup were classified as having received a screening mammogram. Among women age 40 and over who had seen a physician during the past year, 24.7 percent reported having received a screening mammogram. An additional 7.1 percent of women ages 40 and over who had seen a physician during the past year reported that they had received a diagnostic mammogram.

Table 1 presents the weighted percent of women reporting having seen a physician during the past year and having received a screening mammogram, by various sociodemographic variables. Due to the broad confidence intervals associated with strata-specific estimates, there were no significant differences in the proportion of women who received a screening mammogram by age, race, education, marital status, income or region.

Discussion/Recommendations

These survey results indicate that awareness levels of mammography are high; however, awareness does not necessarily result in receiving a mammogram. Although not statistically significant, awareness levels for whites was 93.7 percent compared to 70.9 percent for blacks.

Although the scientific evidence supports the efficacy of mammography as a screening tool, it is highly underutilized. A 1986 Gallup survey reported that 19 percent of women over age 50 responded that they have annual mammograms (9). Respondents to the 1987 New York State BRFSS exceeded the proportion of women reported in national surveys to have ever had a mammogram. However, these proportions do not approach the National Cancer Institute objective that 80 percent of women over age 50 receive annual screening mammograms. This suggests that recommended mammography screening behaviors have not yet been widely adopted by women. A 1985 survey commissioned by the American Cancer Society reported that only 11 percent of primary care providers recommended mammography to their patients based on the American Cancer Society guidelines for asymptomatic women (10).

There does appear to be some increase in the utilization of mammography screening. Using national BRFSS data from all participating areas, it was found that 29 percent of women ages 50 and older who went to a physician for a routine checkup without a breast problem reported having had a screening mammogram in the last year. Significant increases were apparent during 1987 following Nancy Reagan's breast cancer diagnosis and the American Cancer Society's spring breast cancer awareness campaign (11). On a state-by-state basis, during 1987, the percentage of women receiving screening mammograms ranged from a low of 15 percent in Indiana to a high of 46 percent in New Hampshire; in New York, 29 percent of respondents reported having a screening mammogram within the last year (12). (Data were age-adjusted to allow comparisons between areas.)

There are major barriers to overcome in achieving widespread application of screening mammography. They include a lack of information by both the public and health professionals concerning the value of screening, cost barriers and safety issues. Base line state data on mammography utilization is important for effective education program planning.

The CAN*TROL statistical model (13) estimates the potential decrease in mortality that could be achieved by the year 2000 through more widespread use of regular clinical and mammographic examinations. Estimates were based on the following assumptions about women over age 50:

- Currently 45 percent are examined yearly by a physician.
- Currently 15 percent receive a mammogram annually.
- By the year 2000, 80 percent will have an annual examination by a physician.
- By the year 2000, 80 percent will receive a mammogram annually.
- Current incidence and survival rates would prevail in the future.
- The effect of breast self-examination was not included in the model since its impact has never been measured in a controlled clinical trial.

Based on these assumptions, an estimated 16 percent decrease in mortality could be achieved, for a total of 4,100 potentially preventable breast cancer deaths in New York State between 1989 and the year 2000. This decline is illustrated in Figure 5.

Current knowledge of the value of screening mammography in reducing breast cancer mortality indicates a need to focus on increasing the proportion of the population screened. Emphasis must be placed in the following areas:

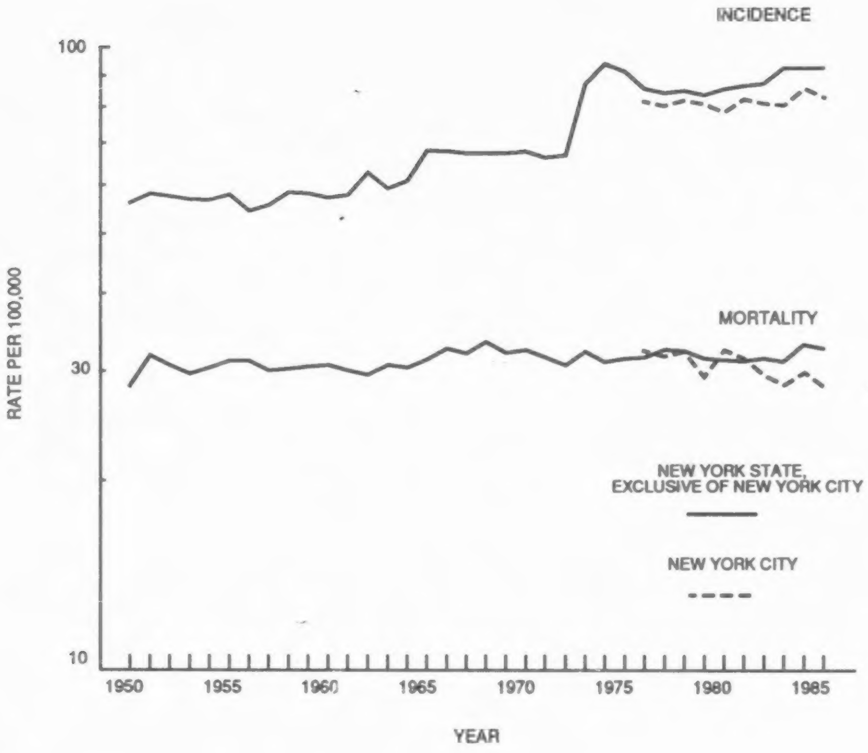
Public Education - Awareness of mammography in this survey population is high, however, the fact that mammography experience does not match awareness indicates a need for further education. Programs need to have educational components that will address the efficacy of mammography as a screening tool and its lifesaving potential; reduction in cost through newly established mobile units, special programs of the American Cancer Society, hospital and health department programs to provide low cost mammograms, and third party reimbursements; and radiation safety and imaging issues as addressed by such programs as New York State's quality control guidelines. Educational programs are particularly critical for minority populations that show lower general awareness levels, although all groups would benefit from more knowledge about the value of mammograms. The New York State Department of Health currently funds ten programs across the state which provide screening and education services to those groups of women with inadequate access to care.

Provider Education - Physicians need to be educated regarding their critical role in recommending screening mammography as part of standard medical care. Physician concerns regarding patient costs, excessive exposure to radiation and high false positive rates as the principle reasons for not recommending mammography for their patients must be allayed. Professional knowledge and awareness of available breast cancer screening modalities should focus on issues of safe and efficacious application, recommended screening intervals and the establishment of proper linkages between screening, diagnosis and treatment of breast cancer. This information could be integrated into professional training programs.

Health agencies, hospitals, community health centers and voluntary organizations share a common interest in reducing breast cancer mortality through widespread application of screening. It is incumbent upon them to work collaboratively to maximize utilization and availability of mammography equipment and to minimize patient costs.

Figure 1.

AGE-ADJUSTED BREAST CANCER MORTALITY AND INCIDENCE RATES AMONG NEW YORK STATE FEMALES, 1950-1985

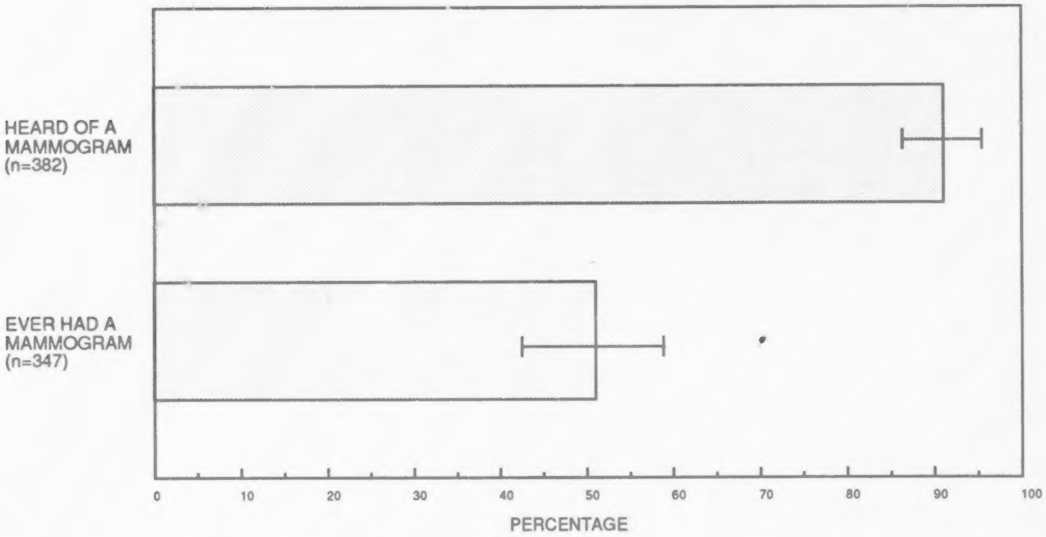


Adjusted to the 1970 U.S. Population

Incidence data from the New York State Cancer Registry; mortality data provided by the Bureau of Productions Systems Management.

Figure 2.

1987 BRFSS - NEW YORK STATE RESPONSES TO SURVEY QUESTIONS ON MAMMOGRAPHY AMONG WOMEN AGES 40 YEARS & OVER



├─┤ - estimated 95% confidence interval, see Methods section of monograph.

Figure 3.

1987 BRFSS - NEW YORK STATE REASON FOR RECEIVING MAMMOGRAM AMONG WOMEN REPORTING EVER HAVING HAD A MAMMOGRAM

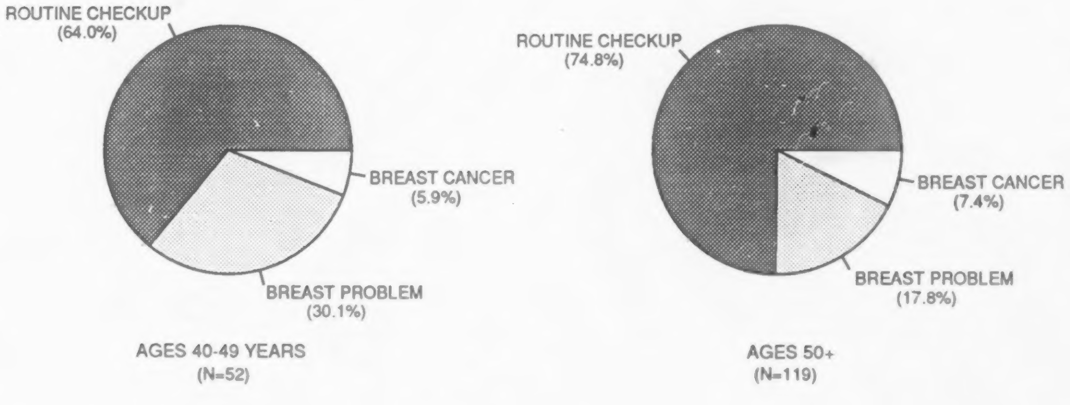


Figure 4.

1987 BRFSS - NEW YORK STATE
DATE OF LAST MAMMOGRAM AMONG 171 WOMEN
AGES 40 YEARS & OVER
REPORTING EVER HAVING HAD A MAMMOGRAM

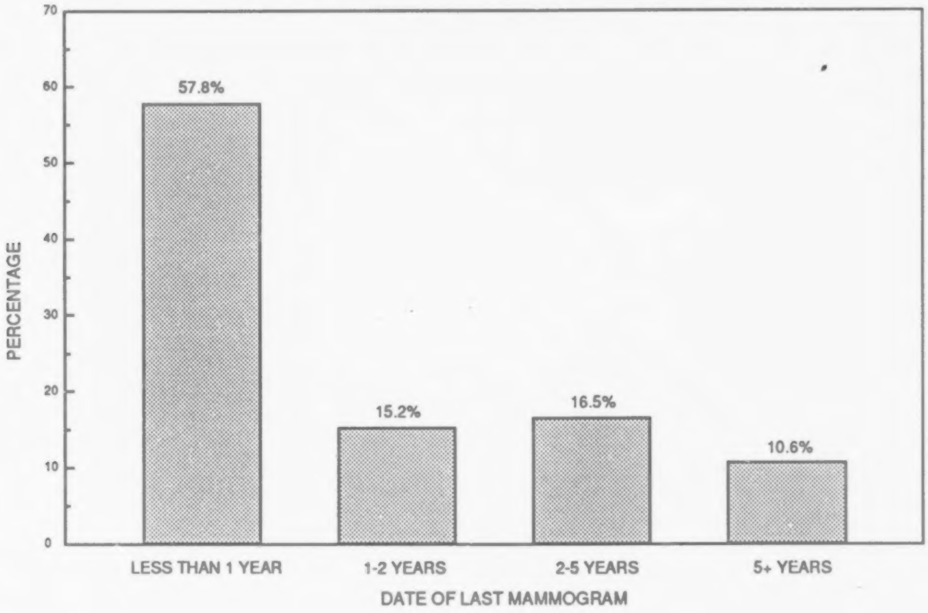


Table 1.

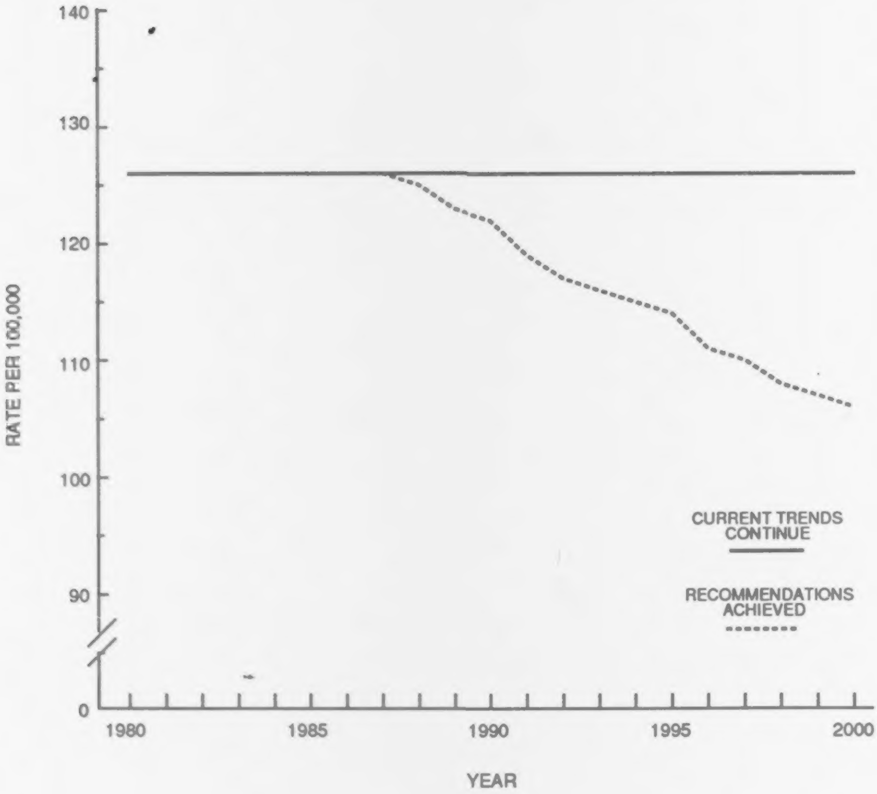
1987 BRFSS - NEW YORK STATE
WEIGHTED PERCENT OF FEMALE RESPONDENTS (AGES 40 YEARS & OVER) REPORTING HAVING SEEN A PHYSICIAN DURING THE PAST YEAR AND HAVING RECEIVED A SCREENING MAMMOGRAM BY SELECTED SOCIODEMOGRAPHIC CHARACTERISTICS

	%	(+/-) C.I.*
TOTAL:	24.7	7.3
SEX:		
Female	24.7	7.3
AGE:		
40-49	23.9	13.3
50-59	35.7	18.3
60-69	18.7	13.0
70+	21.3	13.7
RACE/ETHNICITY:		
White, not Hispanic	23.5	7.9
Black, not Hispanic	34.9	23.0
All other	24.4	29.8
EDUCATION:		
< High School	23.4	13.4
High School graduate	22.7	11.0
Some college	21.1	17.9
College graduate	36.2	21.5
MARITAL STATUS:		
Married	30.8	11.6
Sep/Div/Wid	16.2	9.3
Never married	18.5	20.8
INCOME:		
< $15,000	18.5	10.9
$15,000-$24,999	31.5	18.2
$25,000-$34,999	22.1	21.6
$35,000+	35.0	19.4
REGION:		
New York City	20.6	10.6
Rest of State	27.3	9.8

*Estimated 95% confidence intervals are presented (see Methods section).

Figure 5.

PROJECTED REDUCTIONS IN BREAST CANCER MORTALITY IN NEW YORK STATE FOR THE YEARS 1980-2000 IF RECOMMENDATIONS FOR MAMMOGRAPHY AND CLINICAL EXAMINATIONS ARE ACHIEVED



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OVERWEIGHT (OBESITY)

by

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Introduction

Obesity is a significant public health problem in the United States. It increases risk of several life-threatening chronic diseases, including cardiovascular disease, hypertension, diabetes and cancer. In 1985, the National Institutes of Health held a Consensus Development Conference which clearly delineated the health hazards of obesity (1). Recent data from the Framingham study have shown that obesity is an independent risk factor for cardiovascular disease.

Obesity is defined as a high proportion of adipose (fat) tissue. However, it is difficult to accurately measure the amount of adipose tissue in individuals in clinical or epidemiological settings. Weight (relative to height) is highly associated with body fatness, but weight and height measures alone do not correctly identify all cases of obesity. There are individuals who have a high weight for height due to a higher than average proportion of lean tissue (primarily muscle) rather than fat tissue. Based on weight and height measures alone, these individuals would be erroneously classified as obese. Alternatively, individuals with a normal weight for height may have an abnormally high proportion of adipose tissue, and should be classified as obese. Despite these limitations, the ease of measuring weight and height relative to other methods of determining body fat have made them the most commonly used measures in clinical and epidemiological settings. However, to highlight the distinction between fat tissue and weight, the term "overweight" will be used in this report when referring to measures of weight for height.

It is difficult to measure the prevalence of overweight because there are no ideal standards for the classification of individuals. An ideal weight for a particular height should be that weight which is associated with the lowest level of overall morbidity and mortality, independent of other causes such as smoking. Such standards have not been developed. The standards most commonly used are derived from insurance data. The Metropolitan Life Insurance Company has collected information on heights and weights from people purchasing life insurance policies (3). Follow-up data from this cohort have been used to determine the weight ranges associated with the lowest overall mortality for males and females by height. These standards have been criticized because they are based on a nonrepresentative sample (purchasers of insurance), the data were not controlled for confounders such as smoking and preexisting health conditions that might affect weight, and were not analyzed by age.

Andres (4) recently reanalyzed the original Metropolitan Life data by age groups and found that the published tables understate the weight ranges associated with lowest mortality for older adults. In other words, there is some evidence that a slight increase of weight with age is beneficial. Nonetheless, the Metropolitan Life Tables continue to be the standard generally used to determine overweight. The term "relative weight" is often used to describe the relationship between an individual's actual weight and the mid-point of the acceptable weight range (from the Metropolitan Life Insurance Tables) for their height.

The Body Mass Index (BMI), defined as weight (kg)/height $(m)^2$, has recently been recommended as a method of measuring body fatness. Advantages are that it controls for height, and is highly correlated with other measures of body fat (such as skinfold thickness and body density).

The BRFSS data on weight and height are based on self reported information. A number of studies have investigated the validity of self reported anthropometric data and generally found a tendency among adults to overestimate height and underestimate weight (5-7). Although the differences between measured and self-reported height and weight have usually been small, these may have a larger effect on the classification of individuals as normal weight or overweight.

The most recent national prevalence data on overweight were derived from the National Health and Nutrition Examination Survey II (NHANES II), conducted from 1976 to 1980 (8). Weights and heights were measured in a clinical setting and the BMI was used as the measure of overweight. Overweight was defined as a BMI greater than or equal to that of the 85th percentile for men and women respectively, or a BMI greater than or equal to 27.8 for men and 27.3 for women. This criteria for overweight is not related to morbidity or mortality, although the cutoffs approximate a relative weight based on the Metropolitan Life Tables of 120 percent (using the mid-point of the range for medium build).

Survey Results

Respondents to the BRFSS were asked to report their weight and height without shoes. Values were compared with the 1959 Metropolitan Life Tables. Overweight is defined as a weight for height above 120 percent of the mid-point of the range of weights for a medium frame person.

The prevalence of overweight for different population groups is presented in Table 1. Approximately 24 percent of the total population was overweight in both years. Although the prevalence rate for women was slightly lower than for men, the difference is not statistically significant. The prevalence rate for New York State (overall and by sex, for both 1986 and 1987) was not significantly different from that of all other participating areas in the BRFSS (see Figure 1).

In both years, there was a significant increase in the prevalence of overweight by age, peaking at ages 45-54 in 1986 and at ages 55-64 in 1987. There was also a significant decrease in prevalence with increasing educational level. No significant statistical differences in the proportion overweight were observed for race, marital status, income or region.

The BRFSS also collected data about the weight loss practices of New York State residents. Table 2 presents data based on responses to the question "Are you now trying to lose weight?". There was a significant decline in the percentage of the total population trying to lose weight from 40.3 percent in 1986 to 30.5 percent in 1987. In both years, the percentage of males trying to lose weight was significantly lower than the percentage of females. However, there was no significant trend with age.

As shown in Figure 2, during 1986, the proportion of the total population trying to lose weight (40.3 percent) was significantly higher than the proportion who were actually overweight (23.9 percent). A similar pattern existed in 1987, although the difference was not significant. As Figure 2 indicates, this disparity was significant for females in both years, but not for males.

In 1986, a substantial proportion (72.9 percent) of the overweight population were trying to lose weight (Figure 3). However, the percentage of overweight trying to lose weight in 1987 was significantly lower at 54.6 percent. While this decrease occurred among both males and females, it was significant only for females.

As Table 3 shows, calorie control was used by over 80 percent of those trying to lose weight. There were no significant differences from 1986 to 1987, by sex or age. In contrast, Table 4 shows the percentage of those trying to lose weight who had increased their physical activity. The proportion using physical activity as a weight control measure (47.1 percent in 1986 and 52.0 percent in 1987) was significantly lower than the 81 percent who were eating fewer calories. The percentage of females using increased physical activity as a weight control practice was not significantly different from the percentage of males. However, there was a significant decrease with age in the use of physical activity in weight loss.

Discussion/Recommendations

The results of this survey must be interpreted with caution because the data are based on self-report of height and weight; studies have shown that people tend to overestimate their height and underestimate their weight (5-7). Thus, the data presented are probably an underestimate of the true prevalence of overweight. Nonetheless, it appears that overweight is a major health problem among most population groups of New York State residents. The overall rate for New York State adults was approximately 24 percent in both 1986 and 1987. This rate is similar to the rate of 25.7 percent found in the NHANES II survey (1976-80) for the nation as a whole (8). New York State data show no significant differences in the prevalence of overweight by race, possibly a result of the small size of the nonwhite sample. National data indicate that the prevalence of overweight among black females was much higher than among white females (43.8 percent vs. 25.1 percent) while the rates for black and white males were similar (25.7 percent vs. 24.4 percent respectively).

The data for New York State also indicate a sharp reduction in the proportion of the overweight who are trying to lose weight, from 72.9 percent in 1986 to 54.6 percent in 1987. While reasons for this decrease are unknown, it may reflect a sense of frustration among the overweight after repeated unsuccessful attempts to maintain weight lost in the past. If so, it implies that care should be taken when recommending a weight loss program, so as to insure the maximum likelihood of success. Educational messages should be aimed at helping residents identify components of a safe and effective weight loss regimen and at encouraging long-term efforts.

While the proportion of overweight people trying to lose weight declined between 1986 and 1987, a significant proportion of the non-overweight population reported trying to lose weight. There may be several explanations for this phenomenon. Perhaps respondents misinterpreted the question, "Are you currently trying to lose weight" to mean "Are you currently trying to maintain a previous weight loss?" If that were the case, those who were still carefully watching their diet in order to maintain a weight loss would be counted as currently trying to lose weight. Alternatively, the data may suggest an inappropriate attempt by the non-overweight, particularly women, to lose additional weight, possibly to fit a fashionable image of ideal weight. Such inappropriate weight loss may compromise overall nutritional status. Educational messages should clearly identify the current criteria for overweight, and caution against excessive weight loss.

Those trying to lose weight (either appropriately or inappropriately) are well aware of the role of reducing calories in a weight loss regimen. Over three-quarters of subgroups of the population (by sex or age) report eating fewer calories in order to reduce weight. However, a much smaller portion of the population is using physical activity as a weight loss mechanism. There is a dramatic decrease by age in the use of physical activity, from over 70 percent of ages 18-24 years reporting that they have increased their physical activity in order to lose weight to less than 35 percent of those over age 65 reporting this practice. The use of physical activity appears to drop off sharply after age 44. This information has important implications for public health efforts to reduce overweight. Increased attention needs to be focused on the appropriate use of physical activity in weight loss. Messages about the importance of activity and on safe methods of increasing activity should be developed, particularly for older adults.

Table 1.

1986 and 1987 BRFSS - NEW YORK STATE
WEIGHTED PERCENT OF RESPONDENTS REPORTING WEIGHT FOR HEIGHT GREATER THAN 120% OF IDEAL BODY WEIGHT*
BY SELECTED SOCIODEMOGRAPHIC CHARACTERISTICS

	1986		1987	
	%	(+/-) C.I.**	%	(+/-) C.I.**
TOTAL:	23.9	3.9	24.2	3.8
SEX:				
Male	21.4	5.6	22.6	5.8
Female	25.7	5.1	25.6	5.0
AGE:				
18-24 years	***7.6	7.1	***11.0	8.2
25-34	16.6	6.8	16.6	6.7
35-44	27.0	9.1	24.6	8.2
45-54	35.6	11.6	30.8	12.0
55-64	28.4	11.4	35.1	11.6
65+	31.2	9.4	32.5	9.5
RACE/ETHNICITY:				
White, not Hispanic	22.8	4.3	24.7	4.2
Black, not Hispanic	27.8	11.9	32.2	12.2
All other	25.1	10.9	12.7	9.7
EDUCATION:				
< High School	***32.1	9.7	***37.8	10.5
High School graduate	26.1	6.8	29.7	6.9
Some college	21.3	7.7	15.6	6.5
College graduate	16.7	6.5	15.2	6.3
MARITAL STATUS:				
Married	26.8	5.5	24.6	5.2
Sep/Div/Wid	27.8	7.7	29.7	7.8
Never married	12.2	6.3	19.0	7.5
INCOME:				
< $15,000	31.4	8.1	34.4	8.8
$15,000-$24,999	19.4	8.0	23.5	8.2
$25,000-$34,999	26.2	10.4	23.6	9.6
$35,000+	21.6	7.4	19.0	6.8
REGION:				
New York City	19.0	5.2	25.4	6.1
Rest of State	26.9	5.3	23.7	4.8

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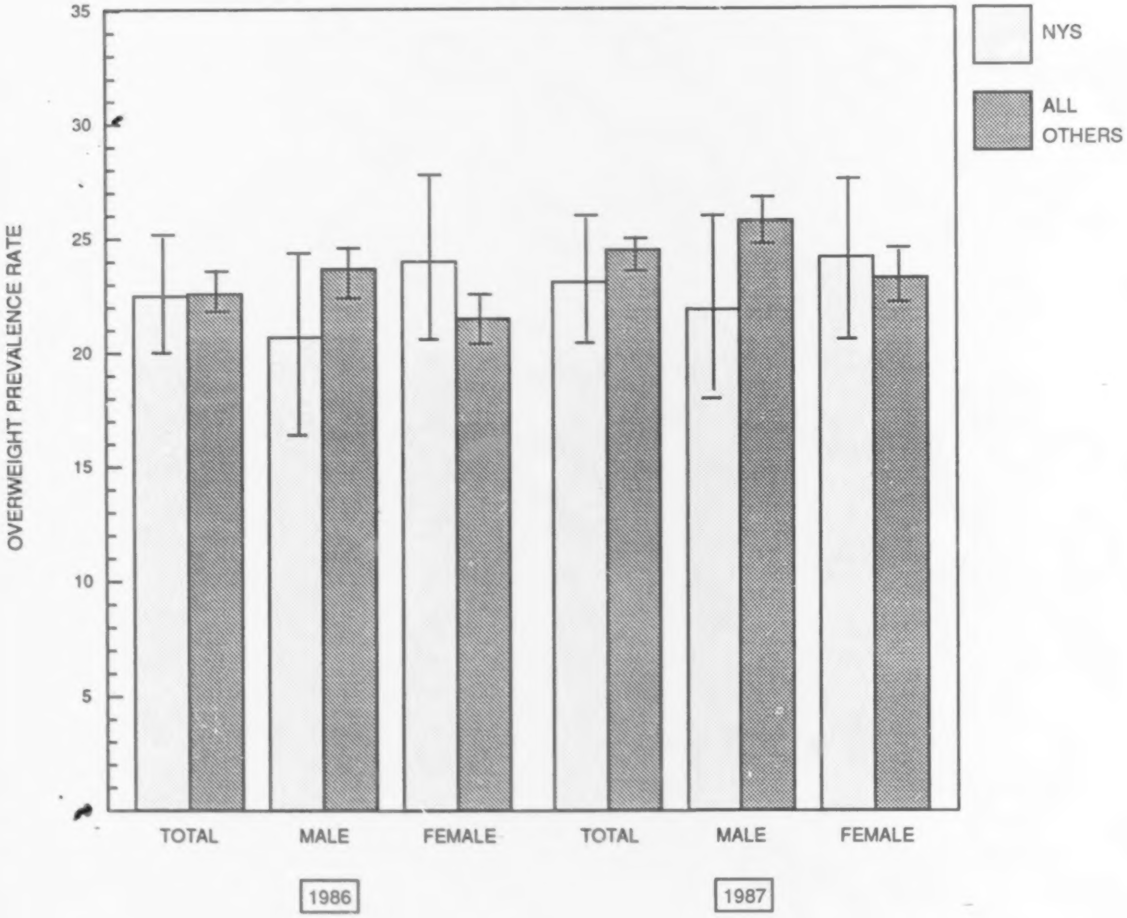
*Ideal Body Weight defined as the mid-value of a medium frame person from the 1959 Metropolitan Height-Weight Tables.

**Exact 95% confidence intervals are presented for the categories "total" and "sex;" all other 95% confidence intervals are estimated (see Methods section).

***$p<0.05$, t-test for trend

Figure 1.

1986 & 1987 BRFSS - NEW YORK STATE PREVALENCE OF OVERWEIGHT BY SEX NEW YORK STATE VS. OTHER BRFSS PARTICIPANTS*



I = exact 95% confidence interval.

*Prevalence rates for NYS are slightly lower than in previous tables because denominator includes unknowns.

Table 2.

1986 and 1987 BRFSS - NEW YORK STATE
WEIGHTED PERCENT OF RESPONDENTS REPORTING TRYING TO LOSE WEIGHT BY SEX AND AGE

	1986		1987	
	%	(+/-) C.I.*	%	(+/-) C.I.*
TOTAL	40.3	4.2	30.5	3.9
SEX:				
Male	29.4	6.1	19.4	5.4
Female	49.8	5.7	40.0	5.4
AGE:				
18-24 years	29.9	12.2	28.7	11.6
25-34	40.1	8.7	30.3	8.1
35-44	44.0	9.8	34.1	8.8
45-54	52.9	11.9	35.7	12.3
55-64	44.5	12.2	31.2	10.9
65+	32.9	9.3	23.6	8.3

Table 3.

1986 and 1987 BRFSS - NEW YORK STATE
WEIGHTED PERCENT OF RESPONDENTS TRYING TO LOSE WEIGHT WHO ARE EATING FEWER CALORIES BY SEX AND AGE

	1986		1987	
	%	(+/-) C.I.*	%	(+/-) C.I.*
TOTAL	81.4	5.4	81.1	5.9
SEX:				
Male	83.0	9.3	81.4	11.6
Female	80.5	6.7	81.0	6.8
AGE:				
18-24 years	76.1	20.9	71.2	20.5
25-34	77.7	12.1	73.2	14.3
35-44	86.8	10.2	83.9	11.0
45-54	88.7	10.8	88.8	13.1
55-64	78.5	15.2	93.9	9.9
65+	77.7	15.0	78.2	16.5

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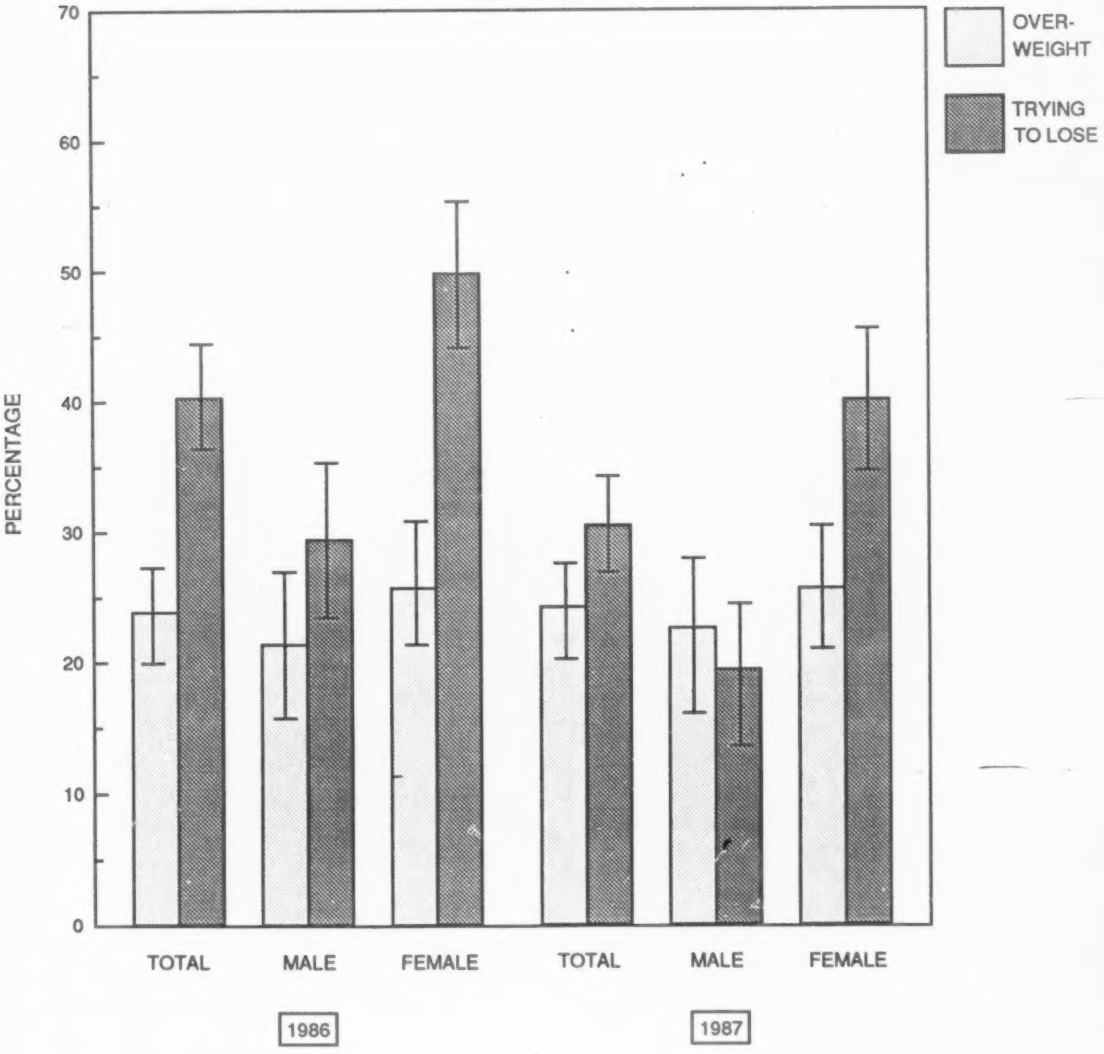
*Estimated 95% confidence intervals are presented (see Methods section).

Figure 2.

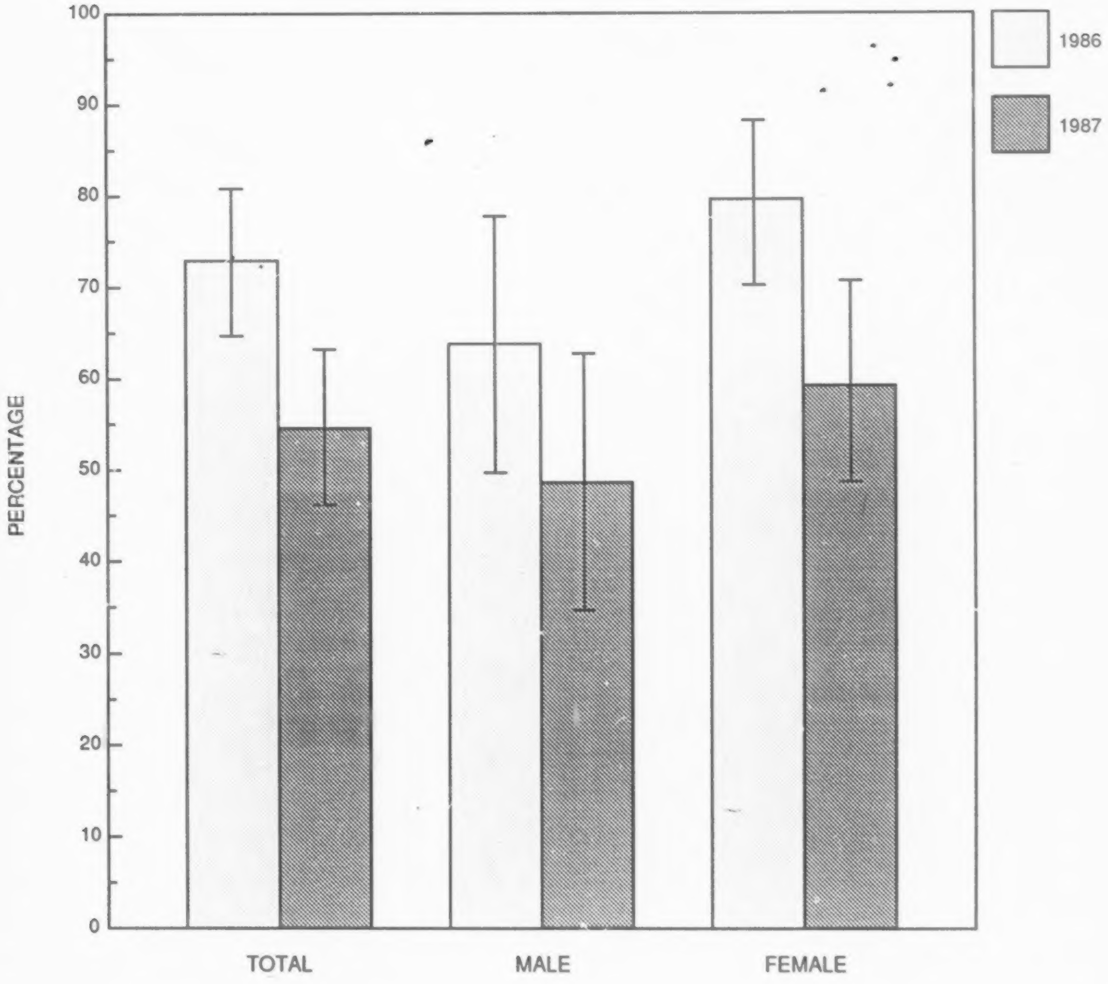
1986 & 1987 BRFSS - NEW YORK STATE PREVALENCE OF OVERWEIGHT VS. PREVALENCE TRYING TO LOSE WEIGHT



I - estimated 95% confidence interval

Figure 3.

1986 & 1987 BRFSS - NEW YORK STATE PERCENTAGE OF OVERWEIGHT RESPONDENTS TRYING TO LOSE WEIGHT, BY SEX



I - estimated 95% confidence interval

Table 4.

1986 and 1987 BRFSS - NEW YORK STATE WEIGHTED PERCENT OF RESPONDENTS TRYING TO LOSE WEIGHT WHO HAVE INCREASED PHYSICAL ACTIVITY BY SEX AND AGE

	1986		1987	
	%	(+/-) C.I.*	%	(+/-) C.I.*
TOTAL	47.1	7.0	52.0	7.5
SEX:				
Male	43.6	12.3	42.3	14.7
Female	48.9	8.4	56.0	8.6
AGE:				
18-24 years	**75.7	17.6	**70.9	20.6
25-34	60.0	14.2	60.0	15.8
35-44	50.1	15.1	62.0	14.6
45-54	33.0	16.1	45.5	20.7
55-64	41.1	18.2	32.0	19.2
65+	24.1	15.4	32.6	18.8

*Estimated 95% confidence intervals are presented (see Methods section).

**$p<0.05$, t-test for trend

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PHYSICAL ACTIVITY AND EXERCISE

by

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Introduction

Although the terms "physical activity," "exercise" and "physical fitness" describe different concepts, they are often confused with one another. "Physical activity" can be defined as any bodily movement produced by skeletal muscles resulting in energy expenditure and is performed to some extent by everyone in order to sustain life. It can be categorized in many ways, with the simplest identifying the physical activity that occurs while sleeping, at work and at leisure (e.g., sports, conditioning exercises, household tasks such as yard work, cleaning and home repair) (1). "Exercise" is a subcategory of physical activity that is planned, structured, repetitive and has as an objective the improvement or maintenance of physical fitness (1). "Physical fitness" is a set of attributes that are either health- or skill-related that people have or attempt to achieve (1).

Regular physical activity and exercise contribute to the enhancement of normal health and well-being (2-7), the amelioration of the effects of chronic disease and age (2,8-10), and the prevention of disease (2,11-14). While there is a certain amount of risk associated with exercise, including injuries, increase in the risk of sudden death caused by the aggravation of existing or hidden heart problems, heat exhaustion or heat stroke (10,15-16), the benefits outweigh the risks.

Physical fitness is one of the 15 priorities of the 1990 Objectives for the Nation. It is currently estimated that 10-20 percent of adults ages 18 and older participate in regular physical activity, which is defined as large muscle groups in dynamic movement for periods of 20 minutes or longer, three or more days per week, and that is performed at an intensity requiring 60 percent or greater of an individual's cardiorespiratory capacity (17).

Although many Americans are now engaged in various leisure-time activities, a large proportion lead relatively sedentary lifestyles. In 1985, the National Health Interview Survey found that 60 percent of adults (57.3 percent males and 62.4 percent females) ages 18 and older are not regularly active (18). Further, 16.4 percent viewed themselves as being less physically active than their contemporaries (19).

While the preceding paragraph does provide some estimates, caution must be used when analyzing and interpreting prevalence estimates for physical activity. There is a lack of adequate data and many national wording of questions and responses when measuring physical activity levels (20).

Studies have shown that the greatest benefits of physical activity and exercise are achieved when the least active individuals become moderately active (14). Sedentary individuals have a limited tolerance for physical effort and find that modest physical work provokes discomfort. When these individuals assume a more active lifestyle with a persistent amount of exercise, exercise becomes less of an effort, there is an awareness of an increase in their capacity for work and they can exert themselves longer and do so with less fatigue (2).

Survey Results

The questions for the physical activity and exercise section of the BRFSS for 1986 and 1987 focused on leisure-time activities. Respondents were asked whether or not they participated in any physical activity or exercise and to provide details of two activities performed during the past month. The prevalence of the risk factor for sedentary lifestyle was estimated by the percentage of people who reported either no physical activity or physical activity less than three times per week and/or less than 20 minutes per occasion.

Based on 1986 BRFSS survey responses, the total prevalence estimates for sedentary lifestyle for adults was 59.6 percent for New York State and 59.3 percent for all other BRFSS participants. In 1987, the prevalence estimates were 73.5 percent and 58.4 percent for New York State and all other participants respectively (Table 1), with the difference being significant.

Table 2 summarizes respondents at risk for sedentary lifestyle by selected sociodemographic characteristics. During 1986 and 1987, there was an inverse relationship between both education and income and the proportion of respondents at risk for sedentary lifestyle. No statistical differences were observed between risk of sedentary lifestyle and age, race or marital status based on data from both the 1986 and 1987 surveys.

A question was asked as to whether the respondent participated in activities such as running, walking, gardening, golf or calisthenics. In 1986, 28.4 percent of the respondents reported that they did not participate in any physical activity as compared with 38.2 percent in 1987. Unfortunately, no question was asked to determine the reason these individuals were inactive.

For those respondents who did report participating in a physical activity (71.6 percent in 1986 and 61.7 percent in 1987), additional questions (e.g., type of activity and/or exercise, length, frequency and duration of stated activity) were asked. Forty different types of primary activities were listed for 1986 and 28 types were listed for 1987. For both years, walking was the primary activity (45.4 percent and 48.6 percent, respectively). A similar percentage of respondents reported participating in a second type of physical activity or exercise (36.7 percent in 1986 and 36.4 percent in 1987).

CDC categorized respondents into four groups according to their self-reported physical activity levels: individuals meeting the 1990 Health Objectives for the Nation in the area of physical activity and exercise; individuals performing regular physical activity but exercising at a lesser level than required by the 1990 Objectives; irregular exercisers performing a physical activity less than 20 minutes or less than three times per week; and sedentary individuals performing no physical activity. Table 3 presents the weighted percentages of respondents in each physical activity level.

Discussion/Recommendations

Establishing physical activity and exercise as a regular lifestyle component is not easy. Part of the problem lies in some misconceptions that individuals often believe about exercise: exercising makes you tired and takes too much time; all exercises give you the same benefits; the older you are, the less exercise you need; and you have to be athletic to exercise (3). Another part of the problem is adherence to exercise programs. While an individual may become motivated to begin a program, there is no guarantee that the individual will continue participating in the program for a specific length of time, especially for a lifetime (4,21). To add to these difficulties is the fact that there are no commonly accepted guidelines or recommendations for physical activity and exercise which are suitable for the general public (22).

Despite these barriers, it is agreed that physical activity and exercise should be integral parts of comprehensive health care. Assessments are needed to determine current health status and levels of understanding and motivation. Well-balanced fitness plans that can be easily adapted to meet individual needs must be developed, implemented and evaluated. Further, existing and available health care settings can be better utilized (22):

- Medical care encounters are ideal situations in which patients can be encouraged to increase their physical activity levels. Health practitioners are in an excellent position to encourage and assist patients to become physically active. A variety of recommendations for clinical physicians on how to prescribe safe and effective physical activity and exercise programs have been published (7,14,23).

- Work places are ideal sites for recruiting participants in various health promotion programs. Well-developed and effectively implemented worksite programs may result in both health and social benefits to participating employees and economic and noneconomic benefits to employers sponsoring the programs. The New York State Department of Health publishes a kit on worksite health that includes information on exercise and physical fitness (24). This kit provides assistance in the development of employee health programs.

- Community settings offer the greatest variety of physical activity programs. Organized programs are offered by numerous nonprofit and profit, private and public organizations. Community campaigns clearly affect residents' interest and awareness in physical activity. Often, exercise is an integral component of comprehensive community-based intervention programs, such as New York State's Healthy Heart Program.

- Schools represent the ideal setting through which the early development of health enhancing behaviors, such as good physical activity practices, can be fostered in children.

Because cardiorespiratory fitness rapidly deteriorates when exercise is decreased or stopped, a lifetime pattern of regular physical activity is recommended to optimize health benefits. As advances in research continue to be made, additional insight into the many aspects of the relationship between physical activity, exercise and fitness to health will be gained.

Table 1.

1986 and 1987 BRFSS
COMPARISON OF NEW YORK STATE WITH OTHER BRFSS PARTICIPANTS
WEIGHTED PERCENT OF RESPONDENTS AT RISK FOR SEDENTARY LIFESTYLE

	1986		1987	
	%	(+/-) C.I.*	%	(+/-) C.I.*
NEW YORK STATE				
TOTAL:	59.6	3.3	73.5	2.9
SEX:				
Male	58.2	5.0	68.9	4.6
Female	60.8	4.2	77.5	3.6
ALL OTHER PARTICIPANTS				
TOTAL:	59.3	0.9	58.4	0.8
SEX:				
Male	58.5	1.3	57.3	1.2
Female	60.0	1.1	59.4	1.0

---

*Exact 95% confidence intervals are presented.

Table 2.

1986 and 1987 BRFSS - NEW YORK STATE WEIGHTED PERCENT OF RESPONDENTS AT RISK FOR SEDENTARY LIFESTYLE BY SELECTED SOCIODEMOGRAPHIC CHARACTERISTICS

	1986		1987	
	%	(+/-) C.I.*	%	(+/-) C.I.*
TOTAL:	59.6	5.5	73.5	4.4
SEX:				
Male	58.2	8.7	68.9	7.6
Female	60.8	7.1	77.6	5.2
AGE:				
18-24 years	51.5	19.0	67.1	14.5
25-34	60.1	11.3	64.1	10.5
35-44	58.3	12.6	76.7	9.0
45-54	54.5	15.8	79.6	11.7
55-64	61.4	15.3	76.6	11.3
65+	71.1	10.6	81.3	8.4
RACE/ETHNICITY:				
White, not Hispanic	57.8	6.5	73.6	5.0
Black, not Hispanic	71.0	13.9	75.8	12.2
All other	61.8	14.7	70.8	14.7
EDUCATION:				
< High School	**74.6	9.9	**82.3	8.7
High School graduate	61.3	9.5	79.3	6.6
Some college	55.4	12.4	69.8	9.6
College graduate	50.6	12.1	61.9	10.7
MARITAL STATUS:				
Married	58.9	7.8	74.2	6.1
Sep/Div/Wid	70.1	9.3	81.2	7.1
Never married	53.5	12.9	65.6	10.8
INCOME:				
< $15,000	**65.9	9.9	**78.3	8.2
$15,000-$24,999	61.0	12.6	75.0	9.5
$25,000-$34,999	57.0	15.9	70.4	12.4
$35,000+	53.5	12.3	65.4	10.2
REGION:				
New York City	64.7	7.8	76.7	6.6
Rest of State	56.0	7.7	71.5	5.9

---

*Exact 95% confidence intervals are presented for the categories "total" and "sex;" all other 95% confidence intervals are estimated (see Methods section).

**p<0.05, t-test for trend.

Table 3.

1986 and 1987 BRFSS - NEW YORK STATE
WEIGHTED PERCENT OF RESPONDENTS CATEGORIZED BY PHYSICAL ACTIVITY LEVEL

	1986			1987		
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE
	%	%	%	%	%	%
INDEX:						
1990 Objectives	6.6	9.1	4.4	4.7	6.3	3.3
Regular Exerciser	33.8	32.7	34.8	21.8	24.9	19.1
Irregular Exerciser	31.2	32.5	30.1	35.4	35.1	35.6
Sedentary	28.4	25.7	30.7	38.2	33.8	42.0

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PREVENTIVE HEALTH PRACTICES: CHECK-UP AND FLU SHOT

by

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Introduction

Preventive health practices are actions that prevent or reduce disease. Individuals determine their participation in preventive health care practices through personal health behaviors. Periodic check-ups are generally accepted as an important component to overall health maintenance; however, controlled, long term studies to evaluate these benefits have been rare. A study conducted by the Metropolitan Life Insurance Company in 1921 reported a 28 percent reduction in expected mortality associated with periodic physical examinations (1). More recently, the Kaiser Health Plan has reported a 35 percent reduction in the mortality rate from potentially preventable causes of death between 1965 and 1975 among people undergoing periodic health checkups (2).

The objectives of periodic physical examinations are to assess overall health status, reinforce desirable health behaviors, and, where possible, to promptly detect and treat disease conditions. Recommendations regarding the interval between complete physical examination (i.e., check-up) vary according to the age of the patient. From young adulthood through middle age, a complete physical examination is generally recommended every five years (3,4). The recommended frequency for receiving a physical examination increases at older ages. People ages 60-74 years are advised to receive a physical every two years, while people ages 75 years and older are advised to obtain a complete physical examination annually (3,4).

Older individuals and people with serious chronic or infectious diseases are prone to more serious complications of influenza. Annual flu (influenza) shots are recommended for both males and females ages 65 years and older, as well as for persons of any age with a serious chronic or infectious disease (5,6).

Survey Results

Questions on preventive health practices were included in the 1987 BRFSS. Specific questions requested information on the last time each respondent had visited a physician for a physical examination and whether the respondent had received a flu shot during the previous 12 months.

Table 1 summarizes the proportion of respondents reporting having received a check-up during the past year. A larger proportion of females (74.3 percent) compared to males (59.6 percent) reported having visited a physician for a check-up during the previous year. Other sociodemographic factors including age, race, education, marital status, income and region were not significantly associated with reports of having received a check-up during the past year. As illustrated in Figure 1, sex-specific differences in the time interval since last physical examination were less distinct at periods which represent a longer interval between checkups.

Nine percent of the respondents to the 1987 BRFSS survey indicated that they had received a flu shot within the previous 12 months (Table 2). There was no difference in the overall proportion of males (8.0 percent) and females (10.5 percent) who reported this preventive health practice. A significant association was observed between increasing age and the proportion of respondents having received a flu shot during the past year. No significant associations were observed between having received a flu shot in the previous year and race, education, marital status, income or region.

When age categories were combined into three groups (18-44, 45-64 and 65+ years), the highest proportion of respondents reporting having received a flu shot during the previous 12 months was observed among males and females ages 65 and older (27.7 percent) compared to respondents ages 18-44 (3.1 percent) and ages 45-64 (10.4 percent) (see Figure 2). Older individuals represent the subpopulation at highest risk for developing serious complications as a result of an influenza infection episode and are therefore most likely to obtain a flu shot. Within various age categories (18-44, 45-64, and 65 years and over), sex-specific differences in the reported use of flu shot were not apparent.

When analyses were restricted to respondents who had seen a physician for a check-up during the past year, the proportion of individuals who reported having received a flu shot within the past year did not increase in any of the three age categories (18-44, 45-64, and ages 65 years and older). This suggests that a recent physician visit for a physical examination did not increase the likelihood of having receiving a flu shot.

Discussion/Recommendations

Based on results of this survey, most individuals are complying with recommended guidelines for intervals between physical examinations. A higher proportion of females reported having received physical examinations within the past year. Older people (ages 65 and over) reported a greater proportion of physical examinations within the last year. The interval since last physical examination did not differ by level of age, race, educational attainment, income, marital status or region.

There were no differences in the overall proportion of males and females who reported having received a flu shot within the past 12 months. People ages 65 years and over reported having received a flu shot at a greater frequency than people of younger ages. Less than one-third of older respondents (65 years and over) who had recently seen a physician reported having received a flu shot within the past twelve months. Educational efforts, specifically targeted to people ages 65 and older, and to physicians treating these patients may increase the proportion of people receiving an annual flu shot. Flu shots could be incorporated as part of the annual physical examinations among older individuals.

Periodic physical examinations provide an opportunity to conduct screening procedures to detect certain chronic conditions and allow the delivery of health counseling services. Because women are seen more frequently by primary care providers, screening guidelines for cancers of the breast and cervix can be promoted. These periodic physician visits can aid in identifying risk factors and untoward health behaviors and serve to highlight the importance of primary prevention.

Table 1.

1987 BRFSS - NEW YORK STATE WEIGHTED PERCENT OF RESPONDENTS REPORTING HAVING RECEIVED A CHECK-UP DURING THE PAST YEAR BY SELECTED SOCIODEMOGRAPHIC CHARACTERISTICS

	%	(+/-) C.I.*
TOTAL:	67.5	4.0
SEX:		
Male	59.6	6.6
Female	74.3	4.8
AGE:		
18-24 years	68.3	12.0
25-34	56.7	8.8
35-44	54.2	9.2
45-54	71.5	11.6
55-64	69.7	10.8
65+	87.8	6.4
RACE/ETHNICITY:		
White, not Hispanic	66.5	4.5
Black, not Hispanic	76.4	10.7
All other	64.6	13.5
EDUCATION:		
< High School	78.8	8.5
High School graduate	69.7	6.7
Some college	61.6	8.5
College graduate	62.0	8.4
MARITAL STATUS:		
Married	65.6	5.6
Sep/Div/Wid	73.0	7.2
Never married	67.7	8.8
INCOME:		
< $15,000	77.0	7.5
$15,000-$24,999	66.9	8.9
$25,000-$34,999	62.6	10.8
$35,000+	65.6	8.2
REGION:		
New York City	70.5	6.1
Rest of State	65.5	5.2

*Estimated 95% confidence intervals are presented (see Methods section).

Figure 1.

1987 BRFSS - NEW YORK STATE
PREVENTIVE HEALTH PRACTICES:
INTERVAL SINCE LAST PHYSICAL EXAMINATION (CHECK-UP) BY SEX

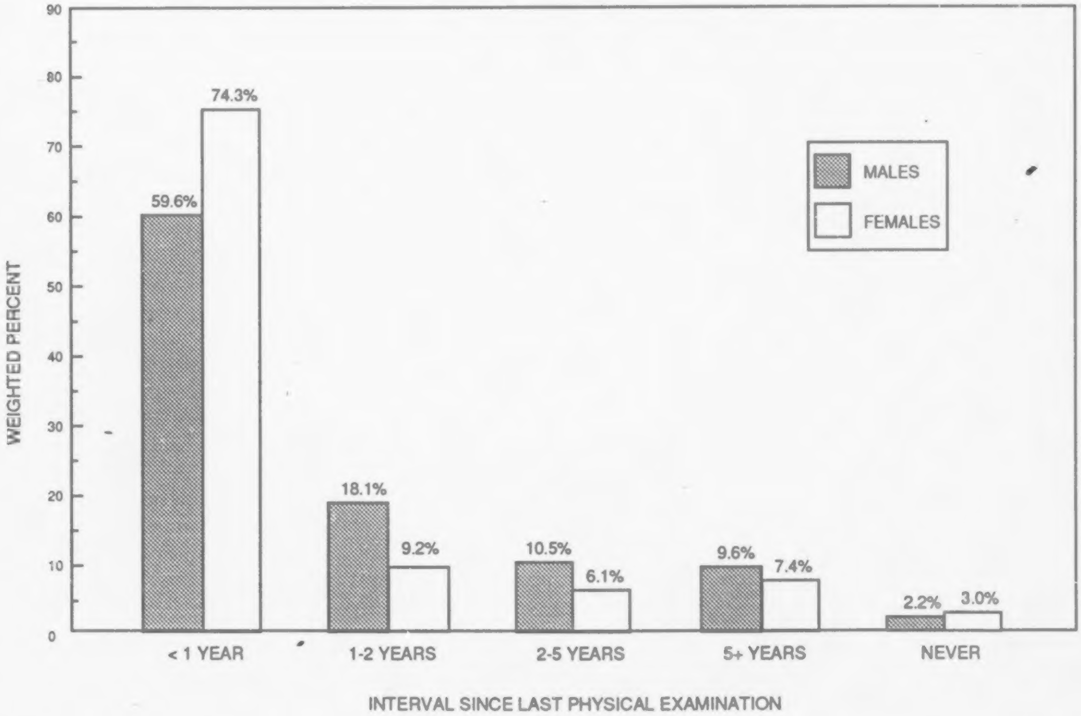

Table 2.

1987 BRFSS - NEW YORK STATE WEIGHTED PERCENT OF RESPONDENTS REPORTING HAVING RECEIVED A FLU SHOT DURING THE PAST YEAR BY SELECTED SOCIODEMOGRAPHIC CHARACTERISTICS

	%	(+/-) C.I.*
TOTAL:	9.3	2.5
SEX:		
Male	8.0	5.4
Female	10.5	3.4
AGE:		
18-24 years	**4.0	5.0
25-34	3.5	3.3
35-44	1.8	2.5
45-54	6.5	6.3
55-64	14.5	8.3
65+	27.7	8.7
RACE/ETHNICITY:		
White, not Hispanic	9.1	2.8
Black, not Hispanic	12.0	8.3
All other	8.9	8.0
EDUCATION:		
< High School	20.0	8.4
High School graduate	6.5	3.6
Some college	6.3	4.3
College graduate	9.3	5.0
MARITAL STATUS:		
Married	8.1	3.2
Sep/Div/Wid	16.2	6.0
Never married	6.9	4.4
INCOME:		
< $15,000	16.7	6.6
$15,000-$24,999	6.5	4.7
$25,000-$34,999	3.8	4.3
$35,000+	8.8	4.9
REGION:		
New York City	8.7	3.8
Rest of State	9.7	3.3

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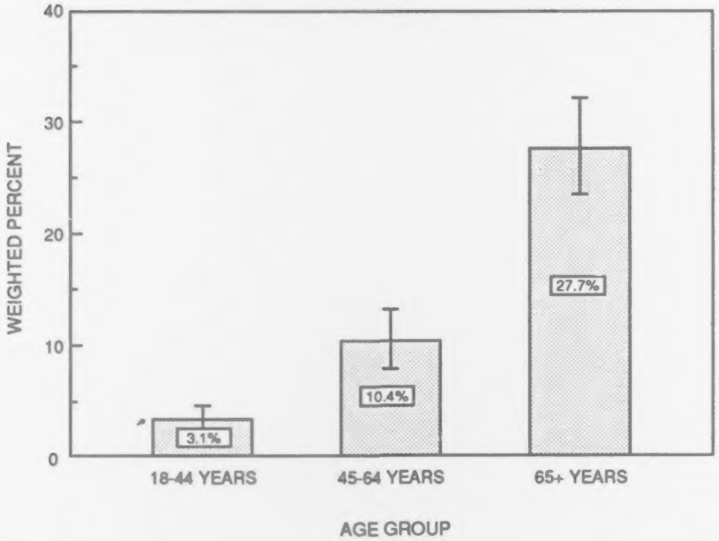
*Estimated 95% confidence intervals are presented (see Methods section).

**$p<0.05$, t-test for trend.

Figure 2.

1987 BRFSS - NEW YORK STATE PREVENTIVE HEALTH PRACTICES: RESPONDENTS REPORTING A FLU SHOT WITHIN THE LAST 12 MONTHS BY AGE GROUP



I - estimated 95% confidence interval, see Methods section of monograph.

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SEAT BELTS

by

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Introduction

The costs of injuries sustained in motor vehicle crashes rank second only to cancer (1). Motor vehicle crashes account for almost one-third of the deaths due to injuries and half of the deaths due to unintentional injuries in the United States (2). The economic cost of motor vehicle crashes is estimated at $57 billion per year (3). Each person, on the average, can expect to be involved in a crash every ten years and stands a 33 percent chance of suffering serious injury from a motor vehicle crash sometime in his/her life (4).

In New York State during 1987, 1,169 drivers and passengers in motor vehicles were killed while over 240,000 sustained injuries. Based on police accident reports, 72 percent of those killed were not using any type of occupant restraint device at the time of the crash.

A series of surveys of licensed drivers in New York State (5) found that following the enactment of mandatory seat belt use legislation in January 1985, self-reported regular use rose from 29 percent to 66.9 percent. Since that time, however, seat belt use declined steadily to 57.6 percent in July 1988.

Survey Results

To assess the level of risk due to nonuse of seat belts, the following question was asked in the BRFSS: "How often do you use seat belts when you ride in a car? Would you say always, nearly always, sometimes, seldom or never?" For the current analysis people who responded "sometimes," "seldom" or "never" were considered at risk.

Approximately one in five New Yorkers is at risk of injury due to nonuse of seat belts. There is no difference between overall rates of nonuse in 1986 when compared to 1987 (Table 1). In both periods males were more likely to be at risk with this difference being most pronounced in 1987 with 28.3 percent of males at risk compared to 16.2 percent of females.

In general, rates of nonuse are greatest in the youngest respondents, ages 18-24 (27.9 percent in 1986; 34.1 percent in 1987), decreasing with age up to the oldest age group, 65 years and older. Across several demographic variables there is general consistency in reported rates of nonuse of seat belts. No significant differences in seat belt use were observed by marital status, income level or area of the state. While rates of nonuse decline with increased level of education the differences between education groups are not significant.

Discussion/Recommendation

The 1986 and 1987 levels of nonuse reported in these surveys are in dramatic contrast to 1983 when nonuse rates exceeded 75 percent. The current levels probably reflect, in part, the impact of the state's mandatory seat belt use law which took effect in January 1985. The BRFSS of that year showed rates of nonuse below 20 percent. An epidemiological evaluation of the seat belt law is currently being completed by the New York State Department of Health.

The seat belt use data from the BRFSS must be interpreted in light of some constraints. First, while residents are generally aware that New York State has a mandatory seat belt use law, they do not always have an accurate idea of the specific requirements (5). In light of this, some respondents might be offering the "correct" answer to the question of seat belt use as opposed to an accurate answer. Secondly, the relative frequency of automobile travel across demographic groups and between years is not taken into account in the survey.

Finally, a thorough assessment of motor vehicle crash injury risks requires detail beyond the scope of the BRFSS. Motor vehicle crash data demonstrate that death and injury are most likely to occur in crashes involving male drivers in single vehicle mishaps, most often at night and, nearly half the time, involving alcohol impairment. These circumstances are likely to be associated with nonuse of seat belts and thus compound the risk of injury. Despite apparent positive results of the mandatory seat belt law, efforts should continue to provide passive restraints in all vehicles.

Table 1.

1986 and 1987 BRFSS - NEW YORK STATE
WEIGHTED PERCENT OF RESPONDENTS AT RISK FROM NONUSE OF SEAT BELTS BY SELECTED SOCIODEMOGRAPHIC CHARACTERISTICS

	1986		1987	
	%	(+/-) C.I.*	%	(+/-) C.I.*
TOTAL:	20.7	3.6	21.8	3.5
SEX:				
Male	22.8	5.7	28.3	6.1
Female	18.8	4.6	16.2	4.1
AGE:				
18-24 years	27.9	11.9	34.1	12.2
25-34	19.7	7.3	25.9	7.8
35-44	24.8	8.6	15.9	6.8
45-54	14.9	8.7	22.7	10.8
55-64	20.0	10.0	15.6	8.6
65+	15.8	7.6	14.1	6.8
RACE/ETHNICITY:				
White, not Hispanic	19.6	4.0	21.1	3.9
Black, not Hispanic	27.9	12.2	19.5	10.0
All other	21.3	10.2	31.1	13.0
EDUCATION:				
< High School	24.2	9.1	24.3	8.9
High School graduate	22.4	6.5	23.1	6.1
Some college	20.3	7.5	22.3	7.3
College graduate	16.6	6.3	18.0	6.7
MARITAL STATUS:				
Married	16.9	4.6	19.5	4.7
Sep/Div/Wid	26.5	7.7	19.0	6.4
Never married	25.8	8.4	30.0	8.6
INCOME:				
< $15,000	21.2	7.4	14.6	6.3
$15,000-$24,999	22.7	8.6	27.3	8.4
$25,000-$34,999	17.5	9.0	23.5	9.5
$35,000+	18.0	6.9	19.1	6.8
REGION:				
New York City	22.3	5.6	23.9	5.8
Rest of State	19.6	4.7	20.4	4.5

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*Exact 95% confidence intervals are presented for the categories "total" and "sex;" all other 95% confidence intervals are estimated (see Methods section).

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SMOKING

by

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Introduction

Cigarette smoking remains the single most important behavioral risk factor for premature morbidity and mortality resulting from cardiovascular disease, cancer and pulmonary diseases. Nationwide, it is estimated that smoking is responsible for 390,000 deaths each year and results in $27 billion in medical care costs, absenteeism, decreased work productivity and accidents. Smoking is thought to be associated with one of every six cancer deaths in the U.S (1).

In 1985, smoking contributed to 87 percent of all lung cancer deaths, 18 percent of stroke deaths and 82 percent of deaths from chronic obstructive lung disease. Among men and women less than 65 years old, smoking contributed to more than 40 percent of coronary heart disease deaths (1).

National data on the prevalence of cigarette smoking are available from the 1985 Current Population Survey (2). Based on these results it is estimated that 31.3 percent of adult males ($\geq$ 16 years old) and 25.0 percent of adult females are current smokers. Among males, the highest rate of smoking is observed among blacks (37.2 percent) compared to whites (30.7 percent) and Hispanics (30.9 percent). In females, blacks (26.0 percent) and whites (25.8 percent) exhibit similar smoking rates, while a lower rate of smoking was observed in Hispanic females (16.5 percent).

The impact of smoking in New York State is substantial. In 1985, the annual cost due to smoking was estimated at $3.8 billion. This includes 26,000 deaths due to smoking-related illness and over 300,000 years of potential life lost, of which 180,000 were caused by ischemic heart disease and lung cancer (3).

Smoking rates observed among selected sociodemographic subgroups are cause for concern. A 1987 study of high school seniors reported the rate of smoking among females to be 26.6 percent compared to only 21 percent for their male counterparts (4). While overall smoking prevalence has declined, these figures show an increase of about 5 percent since 1980 (1). Another example of differing rates of smoking can be observed across different educational levels. In 1987, national smoking prevalence rates ranged from 36 percent among the least educated to 16 percent among the most educated (1). Marked differences in smoking rates have also been reported among various occupational groups (1).

Additional evidence has shown that smoking may contribute substantially to spontaneous abortions, low birth weight babies and peptic ulcers (1). Involuntary or passive smoking has been cited as contributing to lung cancer and increased frequency of respiratory infections in nonsmokers (1).

Survey Results

Current smokers are defined as individuals reporting having smoked more than 100 cigarettes in their entire lifetime and who currently smoked at the time of the interview. Based on responses to the 1986 BRFSS survey, 27.0 percent of the New York State respondents were reported to be current smokers compared to 26.6 percent of respondents in all other BRFSS survey areas. During 1987, 23.2 percent of the New York State respondents were identified as current smokers compared to 24.7 percent of respondents among other BRFSS participants.

In New York State, there was no difference during either 1986 or 1987 in the proportion of males and females who are reported to be current smokers. However, among all other participants in both the 1986 and 1987 BRFSS surveys, the proportion of male smokers was greater than the proportion of female smokers. These proportions and accompanying 95 percent confidence intervals are presented in Figure 1.

In both the 1986 and 1987 surveys, most current smokers reported having consumed one pack of cigarettes per day or less (Figure 2). There were no significant differences between 1986 and 1987 in the daily number of cigarettes reported consumed. Similarly, there were no significant differences between males and females in the daily amount of cigarettes consumed during either 1986 or 1987.

The relationship between smoking status and several independent variables was evaluated for both the 1986 and 1987 surveys. For the 1986 survey, an inverse relationship was observed between increasing age and the proportion of smokers among males (t-test for trend, p=0.025) and for both sexes combined (t-test for trend, p=0.012); no trend with increasing age was noted among females. Based on responses to the 1986 BRFSS survey, no significant associations were observed between smoking status and race, marital status, level of education or income. The 1987 BRFSS survey revealed an inverse relationship between level of education and the proportion of smokers among both sexes combined (t-test for trend, p=0.034); no trend with increasing level of education was apparent among either males or females. No significant associations were observed between smoking status and age, race, marital status or income based on data from the 1987 survey. Table 1 summarizes current smoking among respondents to the 1986 and 1987 surveys by selected sociodemographic characteristics.

Respondents identified as current smokers were asked whether they had stopped smoking for one week during the past year. In the 1986 BRFSS survey, 42.8 percent of current smokers reported having stopped smoking for at least one week in the past year, while in the 1987 BRFSS survey, 33.1 percent reported having stopped smoking for one week or longer. The estimates of the smokers who stopped smoking at least one week were not statistically different between 1986 and 1987 (Figure 3) as demonstrated by the overlapping confidence intervals around these estimates. The proportions of males and females who reported having stopped smoking for one week or longer were not statistically different in either 1986 or 1987.

Both the 1986 and 1987 BRFSS surveys for New York State sought information on use of smokeless tobacco products. Although responses were received from over 1,100 people during each of these years, fewer than nine respondents reported current use of smokeless tobacco products during either 1986 or 1987, suggesting that this is an uncommon behavior among the surveyed population. The small number of respondents who reported use of smokeless tobacco products did not permit detailed breakdowns for this behavioral risk factor.

Discussion/Recommendations

It is encouraging to note that in New York State the overall prevalence of smoking appears to have declined in recent years. In 1983, BRFSS data indicated that 30.4 percent of New Yorkers were current smokers (4) compared to 23.2 percent in 1987.

While conclusions based on these data may be limited due to the small sample size, national surveys of a broader scope indicate that smoking continues to be a significant problem in certain subpopulations. Smoking rates remain high among young women, educationally disadvantaged youth and adults, selected minorities and blue collar workers. Heavy smokers also present a unique challenge for targeted cessation efforts. Innovative prevention and cessation programs need to be developed specifically for these population groups.

While the prevalence of smoking is greater among black males compared to white males, average daily consumption of cigarettes is greater among white males (7). This difference in smoking patterns may have important implications in the application and presentation of cessation programs among these groups.

It is significant that more than 33 percent of smokers reported having quit for at least a week during the past year. This indicates the need to develop strategies to both assist these individuals to succeed in their attempts to achieve smoke-free lifestyles and reduce recidivism. Population-based campaigns need to disseminate information about the addictive nature of tobacco. Providing methods of coping with psychological and physiological addiction to nicotine may aid in preventing relapse.

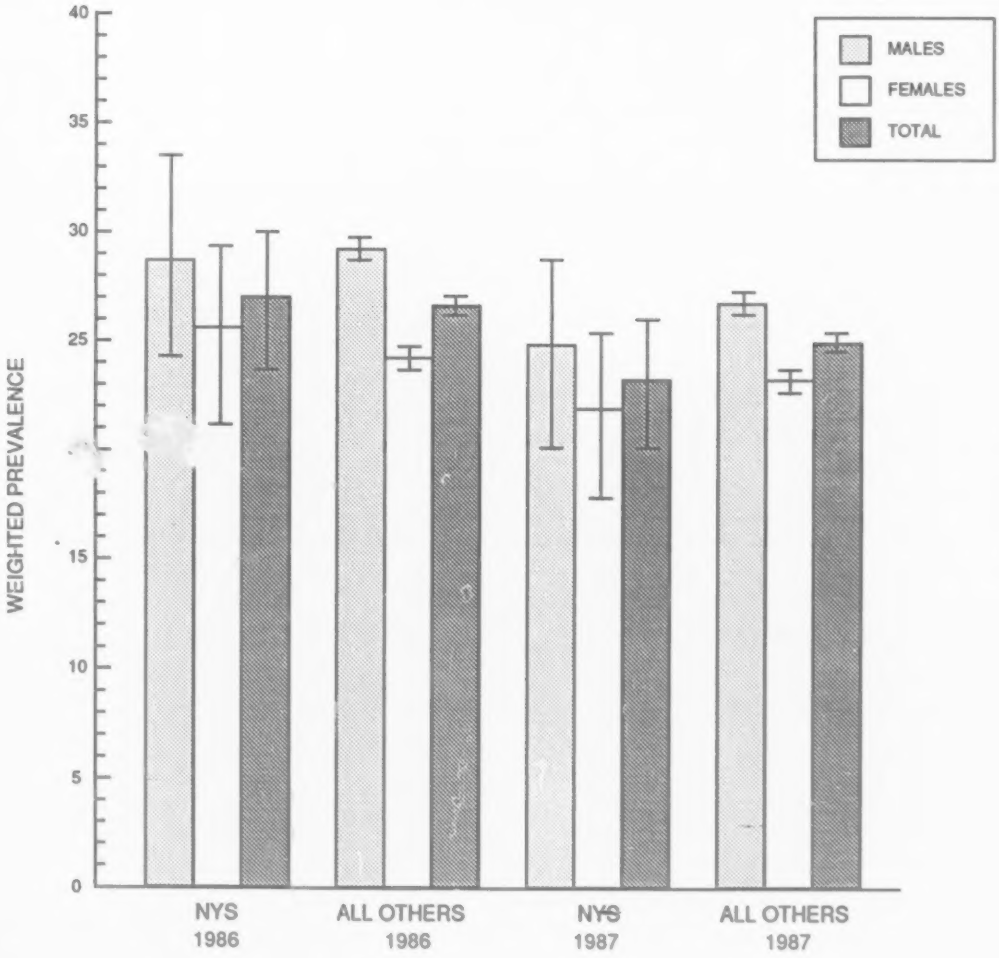
It is important to study new ways to deal with the devastating problem of tobacco use in the United States. The 1989 report of the Surgeon General (1) concludes that "between 1964 and 1985 approximately three-quarters of a million smoking-related deaths were avoided or postponed as a result of decisions to quit or not to start. Each of these avoided or postponed deaths represents an average gain in life expectancy of two decades."

It was not possible to explore use of smokeless tobacco among respondents to the New York State BRFSS surveys in 1986 and 1987 due to a limited number of individuals reporting this behavior. Adolescents represent an important target group for smokeless tobacco preventive strategies since many smokeless tobacco users may become cigarette smokers (8).

Recently developed community-based efforts advocate involvement of the entire community in smoking cessation and prevention efforts. Health professionals can also play an important role in counselling patients to quit smoking. In addition, it is important to continue to promote school-based preventive programs with the goal of discouraging nonsmokers from starting to smoke.

Figure 1.

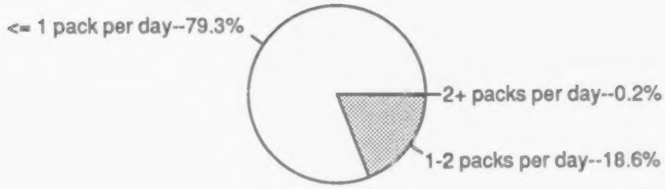
1986 & 1987 BRFSS - NEW YORK STATE
SMOKING PREVALENCE RATES BY SEX
NEW YORK STATE VS. ALL OTHER BRFSS PARTICIPANTS



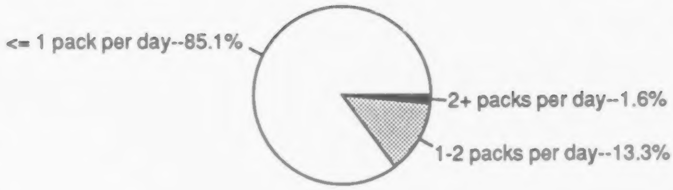
I = exact 95% confidence interval.

Figure 2.

1986 & 1987 BRFSS - NEW YORK STATE REPORTED AMOUNT SMOKED PER DAY, BY YEAR, CURRENT SMOKERS



1986



1987

Table 1.

1986 and 1987 BRFSS - NEW YORK STATE WEIGHTED PERCENT OF RESPONDENTS REPORTING CURRENT SMOKING BY SELECTED SOCIODEMOGRAPHIC CHARACTERISTICS

	1986		1987	
	%	(+/-) C.I.*	%	(+/-) C.I.*
TOTAL:	27.0	3.0	23.2	2.8
SEX:				
Male	28.7	4.7	24.8	4.4
Female	25.6	4.0	21.9	3.6
AGE:				
18-24 years	**31.5	12.4	17.2	9.7
25-34	35.7	8.6	30.6	8.2
35-44	32.1	9.2	27.3	8.3
45-54	26.3	10.5	28.2	11.6
55-64	19.9	9.8	21.3	9.6
65+	13.4	8.2	13.3	6.7
RACE/ETHNICITY:				
White, not Hispanic	28.0	4.5	23.0	4.0
Black, not Hispanic	29.9	11.9	23.7	10.7
All other	19.1	9.3	24.8	12.2
EDUCATION:				
< High School	26.2	8.7	**28.2	9.4
High School graduate	33.0	7.2	26.7	6.4
Some college	24.9	8.0	22.3	7.3
College graduate	21.7	6.9	15.8	6.3
MARITAL STATUS:				
Married	26.4	8.6	26.0	6.7
Sep/Div/Wid	26.2	5.3	23.9	5.2
Never married	29.7	7.4	16.1	7.0
INCOME:				
< $15,000	27.4	7.6	26.7	7.9
$15,000-$24,999	28.6	9.1	27.3	8.4
$25,000-$34,999	34.9	11.2	23.2	9.5
$35,000+	21.6	7.3	22.7	7.3
REGION:				
New York City	26.3	5.6	19.5	5.3
Rest of State	27.6	5.2	25.7	4.8

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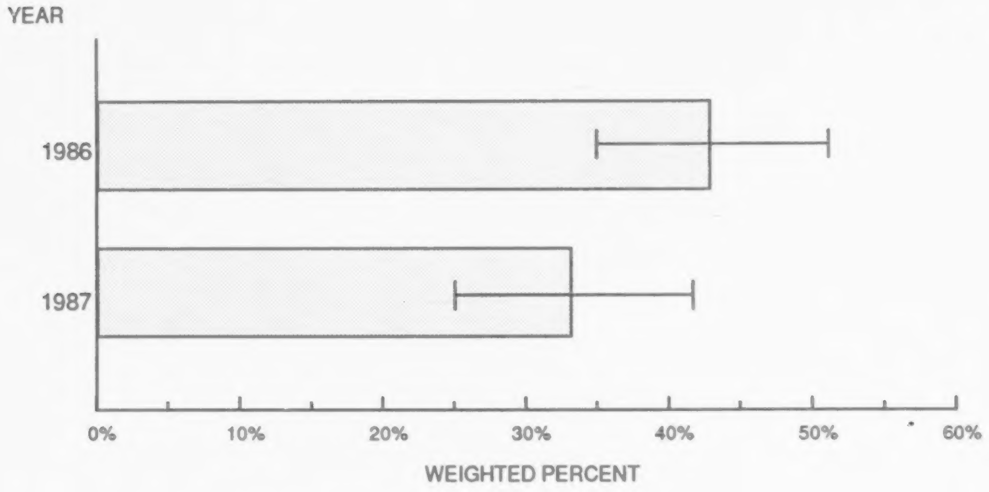
*Exact 95% confidence intervals are presented for the categories "total" and "sex;" all other 95% confidence intervals are estimated (see Methods section).

**$p<0.05$, t-test for trend.

Figure 3.

1986 & 1987 BRFSS - NEW YORK STATE PROPORTION OF SMOKERS WHO REPORTED HAVING STOPPED SMOKING FOR 1 WEEK OR LONGER DURING THE PAST YEAR



⊢⊣ - estimated 95% confidence interval, see Methods section of monograph.

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Multiple Risk

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Introduction

The risk of adverse health consequences from certain behaviors is significantly increased when two or more behaviors are exhibited in the same individual. Three major health outcomes were selected for the purpose of identifying respondents who reported more than one major risk behaviors for each outcome: cardiovascular diseases, oral cancer and motor vehicle accidents.

Survey Results

Cardiovascular diseases - Forty-seven percent of all deaths among New York State residents result from cardiovascular diseases. Two-thirds of these deaths are due to ischemic heart disease. Approximately one-fifth of these deaths occur before the age of 65. New York's ischemic heart disease death rate has been the highest in the nation for most of the 1980s. The causes for this ranking are not known but probably include a higher prevalence of cardiovascular risk behaviors.

Because of the elevated cardiovascular risk attributable to smoking, overweight and high blood pressure, individuals who reported the presence of more than one of these risk factors were identified to be at increased risk of cardiovascular disease (Table 1).

Thirty-eight percent of the 1986 sample reported at least one risk factor. Only 6.2 percent had two risk factors and less than one percent reported all three. Although the proportion of the sample reporting one or more risk factors dropped slightly in 1987, these changes were not significant. The prevalence of cardiovascular risk factors did not differ by sex, age or race.

Oral Cancer - Cigarette smoking and chronic drinking are individual risk factors for oral cancer and, when present together, synergistically increase the risk of malignancy. Therefore, individuals who reported that they engaged in both behaviors were identified to be at increased risk of developing oral cancer. As shown in Table 2, 3.5 percent of the 1986 respondents smoked and reported chronic drinking. The proportion declined to 1.8 percent in 1987, although this difference was not significant. Furthermore, significant differences were not apparent within sex, age or race groupings.

Motor Vehicle Accidents - The likelihood of motor vehicle accidents that result in serious injury or death is dramatically increased in people who report binge drinking, drive after consuming alcoholic beverages and fail to use seat belts. Questions on all three behaviors were included in the 1986 and 1987 BRFSS; responses to these questions were analyzed to identify respondents who engaged in more than one of these risky behaviors. It was not possible, however, to know if the individual engaged in these behaviors at the same time. Nevertheless, it is speculated that such individuals are more likely to increase their risk of motor vehicle accidents because of their tendency toward such high risk behaviors.

As shown in Table 3, the proportion of the BRFSS respondents that engaged in at least two of these high risk behaviors was 3.5 percent in 1986 and 3.3 percent in 1987. In both 1986 and 1987, males were more likely to demonstrate two of these risk factors; differences within age-racial groups were not significant. The proportion of the sample that reported all three risk behaviors was 0.2 percent in 1986 and about 1 percent in 1987.

Discussion/Recommendations

The percentage of respondents in 1986 and 1987 who reported more than one risk factor in each of the three categories examined was small. In each category, the rate declined from 1986 to 1987, although these differences were not statistically significant. Because the relative number of people in this multiple risk pool is low, it does not appear that special efforts to target such individuals are warranted. However, continued educational efforts to inform the public about the synergistic effect of these risk factors are advised.

Table 1.

1986 and 1987 BRFSS - NEW YORK STATE
WEIGHTED PERCENT OF RESPONDENTS WITH
AT LEAST TWO OF THE THREE MAJOR CARDIOVASCULAR RISK FACTORS*

	1986		1987	
	%	(+/-) C.I.**	%	(+/-) C.I.**
Any Two Risk Factors	6.3	2.1	4.7	1.8
SEX:				
Male	6.9	3.4	4.8	2.9
Female	5.7	2.6	4.7	2.3
AGE:				
18-24 years	2.5	4.2	0.5	1.8
25-34	7.7	4.7	3.2	3.1
35-44	9.2	5.7	6.0	4.4
45-54	9.4	6.9	9.3	7.5
55-64	4.5	5.1	5.8	5.5
65+	4.2	3.9	4.8	4.2
RACE/ETHNICITY:				
White, not Hispanic	6.3	2.4	4.2	1.9
Black, not Hispanic	8.1	7.1	10.6	7.8
All other	4.8	4.8	2.5	4.3
All Three Risk Factors	0.1	0.2	0.2	0.4
SEX:				
Male	0.0	-	0.2	0.6
Female	0.2	0.4	0.3	0.6
AGE:				
18-24 years	0.0	-	0.0	-
25-34	0.0	-	0.2	0.8
35-44	0.5	1.4	0.6	1.4
45-54	0.0	-	0.0	-
55-64	0.0	-	0.3	1.3
65+	0.0	-	0.3	1.1
RACE/ETHNICITY:				
White, not Hispanic	0.1	0.3	0.2	0.5
Black, not Hispanic	0.0	-	0.4	1.6
All other	0.0	-	0.0	-

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* Risk factors include cigarette smoking, overweight and high blood pressure.

** Estimated 95% confidence intervals are presented (see Methods section).

Table 2.

1986 and 1987 BRFSS - NEW YORK STATE
WEIGHTED PERCENT OF RESPONDENTS WHO SMOKE AND REPORT CHRONIC DRINKING BY SELECTED SOCIODEMOGRAPHIC CHARACTERISTICS

	1986		1987	
	%	(+/-) C.I.**	%	(+/-) C.I.**
TOTAL:	3.5	1.6	1.8	1.1
SEX:				
Male	5.3	3.0	3.4	2.0
Female	1.9	1.6	0.4	0.7
AGE:				
18-24 years	2.9	4.4	.9	2.4
25-34	5.5	4.1	3.4	3.2
35-44	5.0	4.3	2.6	1.8
45-54	4.1	4.7	0.0	-
55-64	2.1	3.5	2.6	3.7
65+	0.6	1.5	0.8	1.7
RACE/ETHNICITY:				
White, not Hispanic	3.7	1.9	1.7	1.2
Black, not Hispanic	3.6	4.9	2.2	3.7
All other	2.4	3.4	2.2	4.0

---

* Estimated 95% confidence intervals are presented (see Methods section).

Table 3.

1986 and 1987 BRFSS - NEW YORK STATE WEIGHTED PERCENT OF RESPONDENTS AT INCREASED RISK FOR MOTOR VEHICLE ACCIDENTS*

	1986		1987	
	%	(+/-) C.I.**	%	(+/-) C.I.**
Any Two Risk Factors	3.5	1.6	3.3	1.5
SEX:				
Male	6.5	3.3	5.7	3.1
Female	0.9	1.1	1.2	1.2
AGE:				
18-24 years	5.3	6.0	5.8	6.0
25-34	6.3	4.3	7.0	4.5
35-44	2.8	3.2	1.8	2.5
45-54	2.1	3.4	1.7	3.3
55-64	2.2	3.6	0.0	-
65+	0.9	1.9	1.4	2.3
RACE/ETHNICITY:				
White, not Hispanic	4.2	2.0	3.7	1.8
Black, not Hispanic	2.4	4.0	2.0	3.5
All other	0.7	1.9	1.3	3.3
All Three Risk Factors	0.2	0.3	1.1	0.9
SEX:				
Male	0.4	0.8	2.2	2.0
Female	0.0	-	0.2	0.5
AGE:				
18-24 years	0.0	-	5.5	5.8
25-34	0.3	0.9	0.8	1.6
35-44	0.7	1.6	0.0	-
45-54	0.0	-	0.0	-
55-64	0.0	-	0.2	1.0
65+	0.0	-	0.0	-
RACE/ETHNICITY:				
White, not Hispanic	0.2	0.5	1.2	1.1
Black, not Hispanic	0.0	-	0.0	-
All other	0.0	-	1.5	3.3

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* Risk factors include driving after consuming alcoholic beverages, binge drinking, and failing to wear seat belts.

** Exact 95% confidence intervals are presented for the categories "total" and "sex." All other 95% confidence intervals are estimated (see Methods section).

USES OF BRFSS SURVEY DATA & FUTURE DIRECTIONS

Uses of BRFSS survey data

Data describing the prevalence of various health behaviors among residents of New York State have been collected and summarized to emphasize the importance of lifestyle behavioral risks in decreasing the likelihood of selected health outcomes. These annual risk factor surveys have also collected data on health practices, such as preventive health care and mammography, which aim to detect disease at an early stage. The early detection of disease allows for prompt treatment, thereby improving the chances for recovery or long term control of the disease.

These data may prove useful to local health units for conducting and assessing the impact of health programs. Several potential applications of this information for local health units are presented below.

Grant preparation - information of the prevalence of health behaviors in the population and within various sub-groups can be incorporated into grant applications to the state health department, other state agencies and national organizations.

Legislation - information about the prevalence of risk behaviors can be used to support initiatives for legislation at the local level.

Municipal health planning - information on the prevalence of risk behaviors can be used to prepare municipal health plans. Article VI legislation requires localities to implement chronic disease and health education programs.

Local risk factor assessment - statewide risk factor prevalence can be used as a basis for developing local risk factor surveys to provide more detailed information on risk factor prevalence rates at a local level or supplement knowledge gaps within risk factor areas. Also, data on other behavioral risk factors not included in the statewide survey could be included.

Risk behavior modification - information on risk factor prevalence can direct health promotion efforts designed to increase community awareness of healthful behaviors.

Resource allocation - BRFSS data can direct the allocation of scarce resources to address selected behavioral risk factors in the general population or within high-risk groups.

Planning and evaluation - BRFSS provides a data source for the planning and evaluation of locally implemented health programs.

New York State Department of Health staff frequently make use of data collected from the BRFSS. For example, BRFSS data from 1983 and 1985 showing an increase in smoking among females prompted initiatives to prevent young women from starting to smoke and to aid current smokers in quitting. The BRFSS data has also played an important role in the development of the Health Department's cancer prevention and smoking control plans. BRFSS data have been used in the development of the Department's Health Assurance Model which will prioritize desired health status improvements for New York State residents. Other applications include incorporating BRFSS data into the CAN*TROL statistical model to estimate reductions in breast cancer mortality which might result from increased mammographic screening for breast cancer. In addition, BRFSS data will be used as a monitoring tool to evaluate progress toward the 1990 Objectives for the Nation.

Future directions

New York State continues to be an active participant in the BRFSS. While the sample size remained relatively consistent in 1988 (approximately 100 completed interviews obtained each month), there were some noteworthy changes in the 1988 BRFSS questionnaire. In addition to a "core" questionnaire, which each participant in the BRFSS must include, six standardized modules on selected health topics were developed. The questions in these modules could not be altered and were standardized in order to facilitate comparisons with other BRFSS participants. In 1988~~,~~ participants were allowed to include or exclude any of these modules. New York State chose to include the following four modules: county of residence, breast cancer screening, cervical cancer screening and injury control and child safety.

In 1989, CDC requested that New York State increase the BRFSS survey sample size by attempting to complete 125 interviews per month. To assist in the attainment of this goal, a fourth computer was added to the existing CATI system. Also, additional personnel, including a bilingual Spanish-speaking telephone interviewer, were hired and trained. Again, 1989 BRFSS participants were allowed to select standardized modules to supplement the BRFSS core questionnaire. New York State elected to include three modules: county of residence, cervical cancer screening, and injury control and child safety. The breast cancer screening module has been incorporated into the 1989 BRFSS core questionnaire. In addition to these three modules, New York State developed and added state specific questions on skin cancer risks. Results of these more recent surveys will be presented in a separate monograph.

APPENDIX A

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APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY
COMPARISON OF 1986 and 1987 QUESTIONS

DEMOGRAPHIC QUESTIONS

1986	1987
Sex: 1 Male 2 Female	Same
How old were you on your last birthday? Age in years ## 7 Don't know 9 Refused	Same
What is your race? 1 White 2 Black 3 Asian/Pacific Islander 4 Aleutian/Eskimo/American Indian 5 Other 7 Don't know 9 Refused	Same
Are you of Hispanic origin such as Mexican American, Latin American, Puerto Rican or Cuban? 1 Yes 2 No 7 Don't know 9 Refused	Same
What is the highest grade/year of school completed? 1 Eighth grade or less 2 Some high school 3 High school graduate 4 Some technical school 5 Technical school graduate 6 Some college 7 College graduate 8 Post graduate 9 Refused	Same

APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY
COMPARISON OF 1986 and 1987 QUESTIONS

DEMOGRAPHIC QUESTIONS (CONTINUED)

1986	1987
Employment Status: 1 Employed for wages 2 Self employed 3 Out of work more than 1 year 4 Out of work less than 1 year 5 Homemaker 6 Student 7 Retired 9 Refused	Same
Marital Status: 1 Married 2 Divorced 3 Widowed 4 Separated 5 Never been married 6 Member of unmarried couple 9 Refused	Same
Annual Household Income: 1 Less than $10,000 2 $10,000 to $15,000 3 $15,000 to $20,000 4 $20,000 to $25,000 5 $25,000 to $35,000 6 $35,000 to $50,000 8 Over $50,000 7 Don't know 9 Refused	Same

PREGNANCY QUESTION - FEMALES AGES 18-45 ONLY

1986	1987
To your knowledge, are you now pregnant? 1 Yes 2 No 7 Don't know 9 Refused	Same

APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY
COMPARISON OF 1986 and 1987 QUESTIONS

ALCOHOL QUESTIONS

1986	1987
Have you had any beer, wine or liquor during the past month? 1 Yes 2 No 9 Refused	Same
During the past month, how many days per week or per month did you drink any beer? 1-- Days/week 2-- Days/month 777 Don't know 888 Never 999 Refused	Same
On the days when you drank beer, about how many beers did you drink on the average? Exact ## 77 Don't know 99 Refused	Same
During the past month, how many days per week or per month did you drink any wine? 1-- Days/week 2-- Days/month 777 Don't know 888 Never 999 Refused	Same
On the days you drank wine, about how many glasses of wine did you drink on the average? Exact ## 77 Don't know 99 Refused	Same

APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY COMPARISON OF 1986 and 1987 QUESTIONS

ALCOHOL QUESTIONS (CONTINUED)

1986	1987
During the past month, how many days per week or per month did you have any liquor to drink, such as vodka, gin, rum or whiskey? 1-- Days/week 2-- Days/month 777 Don't know 888 Never 999 Refused	Same
On the days when you drank any liquor, about how many drinks did you have on the average? Exact ## 77 Don't know 99 Refused	Same
Considering all types of alcoholic beverages, that is beer, wine, and liquor, how many times during the past month did you have 5 or more drinks on an occasion? Exact ## 77 Don't know 88 None 99 Refused	Same
During the past month, how many times have you driven when you've had perhaps too much to drink? Exact ## 77 Don't know 88 None 99 Refused	Same

APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY
COMPARISON OF 1986 and 1987 QUESTIONS

CHOLESTEROL QUESTIONS

1986	1987
Not Asked	Have you ever had your blood cholesterol checked? 1 Yes 2 No 7 Don't know 9 Refused
Not Asked	About how long has it been since you last had your blood cholesterol checked? 1 Within past year (0-12 months) 2 Within past 2 years (13-24 months) 3 Within past 5 years (25-60 months) 4 More than 5 years (61 + months) 7 Don't know 9 Refused
Not Asked	Have you ever been told your blood cholesterol level in numbers? 1 Yes 2 No 7 Don't know 9 Refused

APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY COMPARISON OF 1986 and 1987 QUESTIONS

CHOLESTEROL QUESTIONS (CONTINUED)

1986	1987
Not Asked	Blood cholesterol is usually given as one number. What was you blood cholesterol, in numbers, the last time it was taken? Exact ### 888 Not told # 777 Don't know 999 Refused
Not Asked	Have you ever been told by a doctor, nurse or someone else that you have high blood cholesterol? 1 Yes 2 No 7 Don't know 9 Refused
Not Asked	Are you now under the advice of a doctor to reduce your cholesterol or blood fat level? 1 Yes 2 No 7 Don't know 9 Refused

APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY COMPARISON OF 1986 and 1987 QUESTIONS

HYPERTENSION - BLOOD PRESSURE QUESTIONS

1986	1987
Have you ever been told by a doctor, nurse or other health professional that you have high blood pressure? 1 No 2 Yes, doctor 3 Yes, nurse 4 Yes, other health professional 7 Don't know 9 Refused	Same
Have you been told on more than one occasion that your blood pressure was high or have you been told this only once? 1 More than once 2 Only once 7 Don't know 9 Refused	Same
Is any medicine currently prescribed for your high blood pressure? 1 Yes 2 No 7 Don't know 9 Refused	Same
Are you currently taking medicine for your high blood pressure? 1 Yes, all or most of the time 2 Yes, only occasionally 3 No 7 Don't know 9 Refused	Same

APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY
COMPARISON OF 1986 and 1987 QUESTIONS

HYPERTENSION - BLOOD PRESSURE QUESTIONS (CONTINUED)

1986	1987
As far as you know, is your blood pressure presently normal (or under control) or is it still high? 1 Normal 2 Under control 3 Still high 7 Don't know 9 Refused	Same
Are you doing any of the following to help control your high blood pressure:	Not Asked
Following a low salt diet? 1 Yes 2 No 7 Don't know 9 Refused	
Watching your weight? 1 Yes 2 No 7 Don't know 9 Refused	
Avoiding stress, relaxing? 1 Yes 2 No 7 Don't know 9 Refused	
Cutting down or stopping smoking? 1 Yes 2 No 7 Don't know 9 Refused	
Following an exercise program? 1 Yes 2 No 7 Don't know 9 Refused	

APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY
COMPARISON OF 1986 and 1987 QUESTIONS

MAMMOGRAPHY QUESTIONS - FEMALES ONLY

1986	1987
Not Asked	Have you ever heard of a mammogram? 1 Yes 2 No 7 Don't know 9 Refused
Not Asked	Have you ever had a mammogram? 1 Yes 2 No 7 Don't know 9 Refused
Not Asked	About how long has it been since you had your last mammogram? 1 Within past year (0-12 months) 2 Within past 2 years (13-24 months) 3 Within past 5 years (25-60 months) 4 More than 5 years (61 + months) 7 Don't know 9 Refused
Not Asked	Was your last mammogram done because of a breast problem, because you've already had breast cancer or was it part of a routine checkup? 1 Breast problem 2 Breast cancer 3 Routine checkup 7 Don't know 9 Refused

APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY
COMPARISON OF 1986 and 1987 QUESTIONS

OBESITY - DIET/WEIGHT CONTROL QUESTIONS

1986	1987
How much do you weigh without shoes? ### in pounds 777 Don't know 999 Refused	Same
About how tall are you without shoes? ### in feet and inches 777 Don't know 999 Refused	Same
Are you now trying to lose weight? 1 Yes 2 No 7 Don't know 9 Refused	Same
Are you eating fewer calories to lose weight? 1 Yes 2 No 7 Don't know 9 Refused	Same
Have you increased your physical activity to lose weight? 1 Yes 2 No 7 Don't know 9 Refused	Same
How often do you usually add salt to your food at the table? 1 Most of the time 2 Sometimes 3 Rarely 4 Never 7 Don't know 9 Refused	Same

APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY
COMPARISON OF 1986 and 1987 QUESTIONS

PHYSICAL ACTIVITY AND EXERCISE QUESTIONS

1986	1987
During the past month, did you participate in any physical activities or exercises such as running, golf, calisthenics, gardening, or walking? 1 Yes 2 No 7 Don't know 9 Refused	Same
Were there other activities or exercises that you participated in during the past month besides running, calisthenics, golf, yard work or walking for exercise? 1 Yes 2 No 7 Don't know 9 Refused	Not Asked
What type of physical activity or exercise did you spend the most time doing during the past month? See activity code list A	Same
How far did you usually walk, run, jog, or swim? See activity code list B	Same
How many times per week or per month did you take part in this activity during the past month? 1-- Times/week 2-- Times/month 777 Don't know 999 Refused	Same
And when you took part in this activity, for how many minutes or hours did you usually keep at it? Exact ### hours and minutes 777 Don't know 999 Refused	Same

APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY COMPARISON OF 1986 and 1987 QUESTIONS

PHYSICAL ACTIVITY AND EXERCISE QUESTIONS (CONTINUED)

1986	1987
Was there another physical activity or exercise that you participated in during the last month? 1 Yes 2 No 7 Don't know 9 Refused	Same
What other type of physical activity gave you the most exercise during the the past month? See activity code list A	Same
How far did you usually walk, run, jog, or swim? See activity code list B	Same
How many times per week or per month did you take part in this activity during the past month? 1-- Times/week 2-- Times/month 777 Don't know 999 Refused	Same
And when you took part in this activity, for how many minutes or hours did you usually keep at it? Exact ### hours and minutes 777 Don't know 999 Refused	Same

APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY PHYSICAL ACTIVITY AND EXERCISE CODING LISTS

CODING LIST A

ACTIVITY CODES AND INTENSITY FACTORS FOR COMMON LEISURE ACTIVITIES

Code	Description
01	Aerobics class
02	Back packing
03	Badminton
04	Basketball
05	Bicycling for pleasure
06	Boating - canoeing, rowing, sailing for pleasure/camping
07	Bowling
08	Boxing
09	Calisthenics
10	Canoeing/rowing in competition
11	Carpentry
12	Dancing, aerobics/ballet
13	Fishing from river bank/boat
14	Gardening
15	Golf
16	Handball
17	Health club exercise
18	Hiking cross country
19	Home exercise
20	Horseback riding
21	Hunting large game - deer/elk
22	Jogging
23	Judo/karate
24	Mountain climbing
25	Mowing lawn
26	Paddleball
54	Other
56	Rowing machine exercise
27	Painting/papering house
28	Racketball
29	Raking lawn
30	Running
31	Rope skipping
32	Scuba diving
33	Skating - ice or roller
34	Sledding, tobogganing
35	Snorkeling
36	Snow shoeing
37	Snow shoveling by hand
38	Snow blowing
39	Snow skiing
40	Soccer
41	Softball
42	Squash
43	Stair climbing
44	Stream fishing in waders
45	Surfing
46	Swimming laps
47	Table tennis
48	Tennis
49	Touch football
50	Volley ball
51	Walking
52	Water skiing
53	Weight Lifting
55	Bicycling machine exercise
99	Refused

CODING LIST B

Miles and tenths ##.#   777 Don't know   999 Refused

Lap Swimming

Pool Size	Laps
50 foot	10 = 0.1 mile
100 foot	5 = 0.1 mile
50 meter	3 = 0.1 mile

Running/Jogging/Walking

1/2 mile = 0.5 mile
1/4 mile = 0.3 mile
1/8 mile = 0.1 mile
1 block = 0.1 mile

APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY COMPARISON OF 1986 and 1987 QUESTIONS

PREVENTIVE HEALTH - ROUTINE CHECKUP AND FLU SHOT QUESTIONS

1986	1987
Not Asked	About how long has it been since you last visited a doctor for a routine checkup, shots, or tests and not for things bothering you? 1 Within past year (0-12 months) 2 Within past 2 years (13-24 months) 3 Within past 5 years (25-60 months) 4 More than 5 years (61 + months) 7 Don't know 9 Refused
Not Asked	Have you had an influenza vaccination, commonly called a flu shot, in the last 12 months? 1 Yes 2 No 7 Don't know 9 Refused

SEAT BELT USE QUESTION

1986	1987
How often do you use seat belts when you drive or ride in a car? 1 Always 2 Nearly always 3 Sometimes 4 Seldom 5 Never 7 Don't know 9 Refused	Same

APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY
COMPARISON OF 1986 and 1987 QUESTIONS

TOBACCO USE - CIGARETTE SMOKING QUESTIONS

1986	1987
Have you smoked at least 100 cigarettes in your entire life? (100 cigarettes = 5 packs) 1 Yes 2 No 7 Don’t know 9 Refused	Same
Do you smoke cigarettes now? 1 Yes 2 No 7 Don’t know 9 Refused	Same
On the average, about how many cigarettes a day do you smoke? (20 cigarettes = 1 pack) Exact ## 88 Don’t smoke regularly 99 Refused	Same
Have you stopped smoking for a week or more sometime during the past year? 1 Yes 2 No 9 Refused	Same
Not Asked	About how long has it been since you last smoked cigarettes fairly regularly? 1 Within past year (0-12 months) 2 Within past 2 years (13-24 months) 3 Within past 5 years (25-60 months) 4 More than 5 years (61 + months) 7 Don’t know 8 Never 9 Refused

APPENDIX B

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM SURVEY
COMPARISON OF 1986 and 1987 QUESTIONS

TOBACCO USE - SMOKELESS TOBACCO QUESTIONS

1986	1987
Ever used/tried any smokeless tobacco products (chewing tobacco or snuff)? 1 Yes 2 No 7 Don't know 9 Refused	Same
Currently use any smokeless tobacco products (chewing tobacco or snuff)? 1 Yes 2 No 7 Don't know 9 Refused	Same
Have you stopped using smokeless tobacco for a week or more sometime during the past year? 1 Yes 2 No 7 Don't know 9 Refused	Same
For how long have you been using smokeless tobacco? Exact ## years 87 Less than 1 year 89 Occasional use, not regular 77 Don't know 99 Refused	Same
Do you think using smokeless tobacco can cause any of the following: Tooth decay? Cancer of the mouth? Gum disease or mouth sores? Stained teeth? 1 Yes 2 No 7 Don't know 9 Refused	Not Asked

APPENDIX C

PARTICIPANTS IN THE BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM

1986	1987
ALABAMA	ALABAMA
ARIZONA	ARIZONA
CALIFORNIA	CALIFORNIA
FLORIDA	FLORIDA
GEORGIA	GEORGIA
HAWAII	HAWAII
IDAHO	IDAHO
ILLINOIS	ILLINOIS
INDIANA	INDIANA
KENTUCKY	KENTUCKY
	MAINE
	MARYLAND
MASSACHUSETTS	MASSACHUSETTS
MINNESOTA	MINNESOTA
MISSOURI	MISSOURI
MONTANA	MONTANA
	NEBRASKA
	NEW HAMPSHIRE
NEW MEXICO	NEW MEXICO
NEW YORK	NEW YORK
NORTH CAROLINA	NORTH CAROLINA
NORTH DAKOTA	NORTH DAKOTA
OHIO	OHIO
RHODE ISLAND	RHODE ISLAND
SOUTH CAROLINA	SOUTH CAROLINA
	SOUTH DAKOTA
TENNESSEE	TENNESSEE
	TEXAS
UTAH	UTAH
	WASHINGTON
WEST VIRGINIA	WEST VIRGINIA
WISCONSIN	WISCONSIN
DISTRICT OF COLUMBIA	DISTRICT OF COLUMBIA

State of New York
Mario M. Cuomo, Governor

Department of Health
David Axelrod, M.D., Commissioner